

CHILDREN'S PERCEPTION OF RESEARCH PARTICIPATION: EXAMINING TRAUMA EXPOSURE AND DISTRESS

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ABSTRACT: USING THE REACTIONS TO RESEARCH Participation Questionnaire for Children (RRPQ-C), this study examined perceptions of research participation among 181 school-aged children with and without trauma histories. As part of two larger studies, children completed non-trauma related tasks to assess emotion understanding and cognitive ability. Parents (and not children) reported on children's interpersonal (e.g., sexual abuse, physical abuse, witnessing domestic violence, witnessing community violence) and non-interpersonal (e.g., motor vehicle accidents, medical traumas, natural disasters) trauma exposure. Children's perceptions of costs and benefits of research participation and understanding of informed consent did not vary as a function of trauma exposure. The number of traumatic events experienced was unrelated to children's perceptions. Furthermore, children across trauma-exposure groups generally reported a positive cost-benefit ratio, and understanding of the consent information. Implications of these data are discussed.

KEY WORDS: ethics, child trauma research, cost-benefit, research participation, children

Received: August 8, 2007; revised: September 30, 2007

THE ETHICS CODE OF THE American Psychological Association outlines the principles of autonomy, non-maleficence, beneficence, and justice as general guidelines for all psychological research (APA, 2002). Further, the United States federal regulations of human research require researchers to consider providing additional protection of participants who may be vulnerable, including children (Title 45 Part 46.111; Code of Federal Regulations, 2005). As described in the federal guidelines, when vulnerable groups, such as children, are recruited as potential

research participants, researchers need to ensure the voluntary nature of research participation through full informed consent and assent. Investigators also need to consider additional limitations on the level of potential risk or harm to the participant in comparison to the potential benefits (i.e., cost-benefit ratio).

In addition to the ethical concerns inherent in conducting any research with children, specific issues may arise when asking trauma-exposed children to participate in research studies (for a review, see Becker-Blease & Freyd, 2006). Even in studies that do not involve trauma-relevant tasks, there may be concerns that trauma-exposed children are particularly vulnerable in the research context. Although researchers and ethics oversight committees are undoubtedly mindful of these ethical issues, limited empirical evidence is available to help inform decisions when designing and implementing studies with trauma-exposed children (see Kassam-Adams & Newman, 2005). Therefore, after providing an overview of the previous empirical studies of cost-benefit ratios in trauma research, we offer new data on children's responses to research participation as a function of their trauma exposure status and psychological distress.

Ethics and Trauma Research Generally. Various commentaries have suggested that extra attention must be paid to ethical considerations when research involves participants who have been exposed to trauma (e.g., Fleischman, Collogan, & Tuma, 2006; McNulty & Wardle, 1994). Indeed, some investigators report fears that oversight committees will uniformly deny research on trauma because of perceptions that such research is particularly high risk (see Becker-Blease & Freyd, 2006 for a discussion) or will make decisions based on qualitative experiences rather than systematic assessments of reactions to research (see Ceci, Peters, & Plotkin, 1985). Despite the importance of this topic and the seriousness of decisions by oversight committees to allow (or not allow) research, little empirical evidence existed until recently to guide researchers in making decisions about the cost-benefit ratio when designing and conducting research (see Newman & Kaloupek, 2004; Newman, Walker, & Gefland, 1999; Stanley Sieber, & Melton,

1987). Studies emerging over the last decade, however, indicate stable and positive cost-benefit ratios among adult participants in trauma-related research (e.g., Carlson, Newman, Daniels, Armstrong, Roth, & Loewenstein, 2003; Cromer, Freyd, Binder, DePrince, & Becker-Blease, 2006; DePrince & Freyd, 2004; Newman & Kaloupek, 2004).

Ethics and Trauma Research with Children. Children represent a potentially vulnerable population in research because of concerns about their ability to fully understand and participate in the informed consent/assent process. Researchers and ethics oversight committees may have particularly strong concerns when research involves trauma-exposed children because these children are presumed to be more likely than their non-exposed peers to experience behavioral and emotional problems in the research process. For example, the extent to which children understand consent or assent materials may be influenced by their level of cognitive ability and psychological distress, both of which can be affected by trauma exposure. In the absence of empirical data, concerns about trauma-exposed children's responses to research may lead to the expectation that research participation may be riskier for them than for other children (Becker-Blease & Freyd, 2006).

While empirical studies of responses to research participation with adult survivors of trauma are increasing, research with children exposed to traumatic events remains scarce. Kassam-Adams and Newman (2005) examined a sample of children and their parents who received hospital treatment for traffic-related injuries and found that 52% of children reported feeling glad about participation; 77% of the children also reported feeling good about helping others by being in the study. Dyregrov and colleagues (2000) conducted a content analysis of open-ended debriefing questions asked of refugee families after completion of their research participation and found that the majority of children reported positive benefits in talking about their negative experiences (Dyregrov, Dyregrov, & Raundalen, 2000). Outside of these two studies, few other studies have directly examined perceptions of research participation among children with trauma histories. Thus, the current study is one of a few empirical studies targeting the perceptions of research participation in children who have experienced traumatic events compared to children who have not experienced traumatic events.

Current Study. The current study compared the effects of research participation on children who have experienced traumatic events with children who have not, in their perception of the risks (discomforts, etc.)

and benefits of research participation. Our sample included children with or without trauma histories (information gathered from parents' reports). Child trauma exposure included both interpersonal (e.g., sexual abuse, physical abuse, witnessing domestic violence, witnessing community violence) and non-interpersonal (e.g., motor vehicle accidents, medical traumas, natural disasters) events. Children responded to questionnaires regarding their current behaviors and completed lab tasks designed to assess their functioning. We were interested in examining (1) children's perceptions of risks and benefits of research participation and their understanding of assenting to participate; and (2) if perceptions of risks and benefits and understanding of assent varied as a function of trauma exposure (no trauma, non-interpersonal trauma, and interpersonal trauma).

Method

PARTICIPANTS

Parents with children (aged 7–12 years) in the Denver, Colorado metro area were recruited for participation in two larger projects through flyers posted at local community agencies, community centers, and businesses as well as through the University of Denver Developmental Subject Pool, which contained contact information of families willing to be recruited for research studies. For the purposes of the current study, data from the two studies (Study 1: $n = 72$; Study 2: $n = 114$) were combined. In Study 1, flyers were directed at mothers exposed to stressful events and their 7–11 year old children. Flyers advertised a 3-hour study that “examined mother's and children's reactions to stressful events.” In Study 2, flyers were directed at parents of children of ages 9–12. Flyers advertised the ‘Children's Attention Research’ study, a 2-session study designed to examine “how stressful events affect children's attention, memory, and school performance.” Interested participants for both studies were instructed to contact our lab for additional information.

Of the 186 children who participated in the two studies, we had reactions to participation data for 181 children. Of these 181 children (Age $M = 9.98$; $SD = 1.40$), 86 were female (gender of 6 children was unknown). Six parents did not provide racial/ethnic information about their children; the remaining children were reported to be of the following racial and ethnic backgrounds: 38.9% Euro-American, 24.6% African-American, 23.4% Hispanic/Latino, 2.9% Native American/Alaskan Native, 2.3% Asian/Pacific Islander, and 8.0% other race or bi/multiracial.

PROCEDURE

Prior to data collection, all procedures were approved by the University of Denver Institutional Review Board. All participants completed an extensive informed consent process; testing took place only after the parent consented and the child assented. The informed consent covered the following information: (1) procedures of the study, (2) voluntary participation, (3) option to withdraw from participation at any time without penalty, (4) procedures for maintaining confidentiality, (5) exceptions of confidentiality in situations of ongoing unreported child abuse, (6) potential risks and benefits from participating, (7) compensation, and (8) contact information of people who can address concerns that occurred in the course of completing the study. Understanding of consent/assent materials was assessed with a "quiz." See Table 1 for items on the child version of the consent quiz. If parents or children answered questions incorrectly, corrective information was provided and the question re-administered. Both parent and child had to answer all quiz questions correctly in order for consent/assent to be considered informed and testing to proceed. All participants met this criterion. Parent-child dyads were paid \$30 for study 1 and \$25 per session for study 2; children received several small prizes throughout the testing sessions.

Following informed consent/assent procedures in both studies, parents were seated in a private room and asked to complete several questionnaires and additional lab tasks as part of the larger studies not reported here. Information obtained from parents included children's trauma histories; children were not asked directly about their own trauma histories.

Children were tested by a graduate research assistant in a separate, private room. In Study 1, children completed questionnaires about their own behaviors and their parent's parenting practices. The experimenter read out loud all items on the questionnaires to the

children and recorded their verbal responses on paper to ensure that reading level did not affect children's responses. Children then completed emotion-understanding tasks and subscales of the Wechsler Intelligence Scales for Children—Fourth Edition (WISC-IV) to estimate IQ. Mothers and children came together for one dyadic task designed to assess emotion understanding and communication.

In Study 2, children completed lab tasks in Sessions 1 and 2 designed to assess cognitive (including attention, memory, estimated IQ) and academic (e.g., achievement tests) performance. In Session 2, children also answered questions about their own behaviors and feelings. The experimenter read out loud all items on the questionnaires to the children and recorded their verbal responses on paper to ensure that reading level did not affect children's responses.

After completion of tasks in both studies, parents and children completed questionnaires assessing their perceptions of participating in research. For the two-session study, parents and children completed this questionnaire twice, at the end of each session. Only data from session two (which represented the completion of the entire study) are reported here. Parents were debriefed verbally and given written debriefing forms. Children were also told about the purpose of the study and asked to talk about a pleasant event with the experimenter before leaving.

MATERIALS

Parent-Report Measures. Parents provided information about their children's trauma histories on the UCLA-PTSD Index (Pynoos et al., 1998). Parents indicated whether children had been exposed to any of 12 behaviorally-defined traumatic events; they could also write in events that were not covered by the 12 items. The measure has been shown to have good reliability (Roussos et al., 2005) and validity (Steinberg, Brymer, Decker, & Pynoos, 2004). Children were categorized as having been exposed to interpersonal trauma if parents endorsed at least one of three interpersonal trauma items on the UCLA-PTSD Index, which included: being hit, punched or kicked very hard at home; seeing a family member being hit, punched or kicked very hard at home; having an adult or someone much older touch your child's private sexual body parts when your child did not want them to. Children were also categorized as having been exposed to an interpersonal trauma if parents wrote in a qualifying event in response to the 'anything else' item. Endorsement of any other items on the UCLA-PTSD Index was categorized as non-interpersonal trauma. A total PTSD symptom score was

TABLE 1. Items on Consent Quiz for Children.

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1. What kinds of things will we do today?
 2. What will happen if you tell me about a kid who is being hurt by someone?
 3. Do you have to do everything I ask you to do today?
 4. Do you have to answer every question I ask?
 5. Can you take a break whenever you want to?
 6. If you become upset or bored today, what can you do?
 7. Do you have finish the experiment today?
 8. Can you stop if you feel like stopping without a "good reason"?
 9. Can you say "pass" any time you don't want to do something or don't want to answer a question I ask?
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calculated by summing the severity score for each symptom. Internal consistency for PTSD symptoms scores was excellent in this sample (Cronbach's alpha = .90).

Dissociation was assessed using the Child Dissociative Checklist (CDC; Putnam, 1997), a 20-item parent-report measure that assesses multiple types of observable, dissociative behaviors. The CDC has been demonstrated to have high reliability and validity (Putnam, 1997). Internal consistency was excellent in this sample (Cronbach's alpha = .87). Parents also reported on children's anxiety and depression problems using the Anxiety Problems and Depression Problems subscales of the Child Behavior Checklist (CBCL; Achenbach, 1991). The CBCL has been shown to have excellent test-retest reliability as well as very good construct validity (Achenbach, 1991).

A demographic form asked parents to report on their child's age, racial/ethnic identity, and sex as well as their own occupation, marital status, years of education, and estimated family income. Occupational prestige was coded based on Hollingshead (1975). In study 1, mothers' income (ranging from 1 = \$10,000 or below to 6 = \$50,000 or above), education (ranging from 1 = less than seventh grade to 7 = graduate professional training (graduate degree), and occupation ratings were first transformed to z-scores; an SES composite was then created by averaging the z-scores. In study 2, if parents were married, the partner with highest education and occupation scores were used in the composite.

Child-Report Measures. Children completed the Reactions to Research Participation Questionnaire for Children (RRPQ-C; Kassam-Adams & Newman, 2002; the RRPQ questionnaire is available at <http://www.personal.utulsa.edu/~elana-newman>), a 12-item measure that asks children their views of research studies. Children respond 'yes,' 'no,' or 'maybe' to indicate extent of their agreement with the items. The answers are then transformed into a continuous scale so that 'yes' = 5, 'maybe' = 3, and 'no' = 1. The RRPQ-C assesses four categories: (1) *positive appraisals of research participation* (I am glad that I was in this study; Being in this study made me feel good about myself; Being in this study was boring—reverse coded); (2) *negative appraisals of research participation* (Being in this study made me feel upset or sad; I am sorry I was in this study); (3) *assessment of informed consent and trust in the research team* (I feel good about helping other people by being in this study; It was my choice if I was in the study—I could've said no even if other people wanted me to say yes; The things I said will stay private—no one else will know I said them; I was told the truth about the study before it started); and

(4) *understanding of his/her rights as a research participant* (I knew I could skip questions or parts of the study if I wanted to; I knew I could stop at any time; I knew I could ask to take a break whenever I wanted). The RRPQ-C has been shown to have acceptable reliability (Kassam-Adams & Newman, 2002). Internal consistency was satisfactory in this sample (Cronbach's alpha = .69).

Estimated IQ. Children also completed the Block Design and Vocabulary scales of the Wechsler Intelligence Scales for Children (WISC; either 3rd or 4th Edition; Wechsler, 1991a; Wechsler, 2003a). Full Scale IQ was estimated from scaled scores (Wechsler, 1991b; Wechsler, 2003b).

Other Lab Tasks. As noted earlier, these data were drawn from two larger studies. Here we provide general information about other tasks in the study to give the reader a sense of the task-demands on children; however, we do not provide extensive details because data from these tasks are not reported in this paper. In Study 1, children completed a series of tasks designed to assess their abilities to reason and understand emotion. For example, children and their mothers together looked at pictures of babies expressing a range of different emotions. Children and their mothers then took turns explaining to the other person 'what feeling the baby was expressing,' 'what kind of feeling the baby has' (on a 1–9 rating scale of good—bad feelings), 'how much the baby feels that' (on a 1–9 rating scale of very little—very much), and 'why the baby feels that.' For another emotion understanding task, children were read out loud a story about Diana/David (matched to gender of child) and then asked questions about what Diana/David was feeling on the inside versus what Diana/David was expressing on their face. In addition, children completed a questionnaire about their mothers' parenting practices. The experimenter read out loud all items on the questionnaire to the children and recorded their verbal responses on paper to ensure that reading level did not affect children's responses.

In Study 2, children completed a series of tasks to assess cognitive and achievement abilities. These tasks generally included non-affective stimuli. For example, Behavioral inhibition was assessed with the Gordon Diagnostic System (GDS; Gordon & Barkley, 1998), which requires children to press a key each time they see a "1" followed by a "9" under two conditions. In the first (vigilance) condition, children see a single stream of numbers. In the second (distractibility) condition, children see three strings of numbers and must make the key press only after seeing the correct number sequence in the center column of numbers. Auditory attention

was assessed using the Brief Test of Attention (BTA; Schretlen, Bobholz & Brandt, 1996), which requires participants to listen to a recording of several series of letters and numbers being read aloud; following each series, the child indicates how many numbers were in the series. To assess interference control, children completed one task where they were asked to press buttons to indicate whether positive and negative words appeared in red or green.

Results

One parent did not provide trauma history information on his/her child; of the remaining children, 69 were exposed to interpersonal trauma events (e.g., physical maltreatment at home, sexual maltreatment by an adult, and/or witnessing domestic violence); 61 children were exposed to non-interpersonal trauma events (e.g., natural disasters, motor vehicle accidents, community violence); and 50 children were not exposed to trauma events. Forty-nine children in the interpersonal trauma group were also reported to have had non-interpersonal trauma exposures. Demographic, symptom, and trauma exposure scores by trauma group are reported in Table 2.

See Table 3 for responses to individual items on the RRPQ-C. To provide a baseline for interpreting subscale scores, we first tested whether scores differed from neutral (3 = maybe). For all trauma exposure groups, Positive Appraisals, Informed Consent and Trust in the Research Team, and Understanding of Rights as a Research Participant were all significantly greater than 3,

indicating agreements with these subscale items. For all trauma exposure groups, Negative Appraisals were significantly less than 3, indicating disagreement with having negative appraisals in response to participation. The number of traumatic events experienced (collapsed across non-interpersonal and interpersonal events) was not significantly correlated with any of the appraisal subscale scores. See Table 4 for subscale scores by trauma group.

Age and estimated IQ scores were both negatively correlated with positive appraisal subscale scores (age: $r = -.15, p < .05$; IQ: $r = -.18, p < .05$); thus, as age and IQ increased, positive appraisals decreased. The Depression Subscale on the CBCL was also negatively correlated with the positive appraisal subscale score ($r = -.16, p < .05$). None of the demographic variables or symptom scores were significantly associated with the negative appraisal scores. Table 5 shows zero-order correlations between symptom (PTSD, dissociation, anxiety, depression) and RRPQ-C subscale scores.

Average Cost-Benefit Ratios. To evaluate the cost-benefit ratio of participation in this research, paired samples *t*-tests compared positive and negative appraisals. See Table 4 for cost-benefit ratio mean (*SD*) scores by trauma group. Across all three trauma exposure groups, the cost-benefit ratio was positive (that is, positive appraisals were rated as higher than negative): no-trauma: $t(49) = 26.70, p < .001$, Cohen's $d = 6.63$; non-interpersonal trauma: $t(60) = 31.80, p < .001$, Cohen's $d = 6.86$; and interpersonal trauma: $t(68) = 23.80, p < .001$, Cohen's $d = 4.65$. All effect sizes were large.

TABLE 2. Demographic Variables (age, sex, SES) and Symptom Scores (PTSD, dissociation, anxiety, depression) by Trauma Group.

	Interpersonal Trauma ^a	Non-Interpersonal Trauma ^b	No Trauma ^c	Group Differences
Age	10.33 (1.30)	9.82 (1.27)	9.70 (1.59)	a,c
% Female	20.7% <i>n</i> = 66	14.9% <i>n</i> = 58	13.8% <i>n</i> = 50	–
SES	-.18 (.83)	.19 (.79)	.04 (.90) <i>n</i> = 49	a,b
IQ	91.09 (13.36) <i>n</i> = 68	96.26 (13.33)	99.54 (17.64)	a,c
UCLA-PTSD	17.26 (9.86) <i>n</i> = 65	12.55 (9.36) <i>n</i> = 60	–	a,b
CDC	7.19 (5.72)	5.84 (6.15)	4.20 (5.14)	a,c
CBCL Anxiety	59.87 (8.65) <i>n</i> = 68	56.71 (8.65) <i>n</i> = 59	55.35 (7.15) <i>n</i> = 49	a,c
CBCL Depression	58.56 (7.58) <i>n</i> = 68	57.05 (9.26) <i>n</i> = 59	53.90 (5.61) <i>n</i> = 49	a,c

Note: Letters indicate differences between groups revealed by Tukey's Honest Significant Difference (HSD) test ($p < .05$) with the exception of UCLA-PTSD overall severity. Unless otherwise noted, data are presented as mean (*SD*). Sample sizes are given if missing data.

TABLE 3. Responses to RRPQ-C.

Total <i>n</i> = 181	Yes <i>n</i> (%)	Maybe <i>n</i> (%)	No <i>n</i> (%)	Did Not Answer <i>n</i> (%)
Study was boring	11 (6.1)	17 (9.4)	153 (84.5)	0 (0.0)
Glad I was in study	165 (91.2)	10 (5.5)	6 (3.3)	0 (0.0)
My choice if I was in study	133 (73.5)	25 (13.8)	23 (12.7)	0 (0.0)
Study made me feel upset or sad	1 (0.6)	6 (3.3)	174 (96.1)	0 (0.0)
Things I said will stay private	164 (90.6)	6 (3.3)	11 (6.1)	0 (0.0)
Sorry I was in study	3 (1.7)	3 (1.7)	173 (95.6)	2 (1.1)
Study made me feel good about myself	145 (80.1)	25 (13.8)	11 (6.1)	0 (0.0)
Told the truth about the study	167 (92.3)	7 (3.9)	7 (3.9)	0 (0.0)
Feel good about helping other people	165 (91.2)	11 (6.1)	5 (2.8)	0 (0.0)
I could skip questions or parts of study	175 (96.7)	2 (1.1)	4 (2.2)	0 (0.0)
I could stop at any time	178 (98.3)	0 (0.0)	3 (1.7)	0 (0.0)
I could ask to take a break	180 (99.4)	0 (0.0)	1 (0.6)	0 (0.0)

We next calculated a difference score (positive appraisal—negative appraisal) to capture the cost-benefit ratio. Higher scores indicate more positive appraisals. A one-way ANOVA comparing the cost-benefit ratio across trauma exposure groups revealed no differences between groups ($F(2,177) = 1.32, p = .27$).

RRPQ-C Scores. We then examined responses to individual items to identify children who made any negative appraisals of the research process. Eleven (6.1%) children made one or more negative appraisals. Of these eleven children, eight reported higher scores on the positive appraisal subscale than the negative appraisal subscale, indicating that these children perceived more positive reactions than negative reactions to participating. Thus, the cost-benefit ratio was positive for the vast majority of participants, with only 1.6% (or 3 out of 186) children making negative appraisals of participation.

Understanding Consent. Given our emphasis on informed consent, we next turned to examining whether children reported understanding consent/assent information. Children generally understood the informed consent/assent, with 92.3% reporting post-study that they were told the truth about the study before it began (an additional 3.9% reported ‘maybe’) and 73.5% reporting that it was his/her choice to participate in the study (an additional 13.8% reported ‘maybe’). Children also understood their rights as research participants, with a majority of children reporting full understanding of being able to enact specific procedures such as skipping parts of the study, stopping at any time, and taking a break whenever they wanted (96.7–99.4%). When comparing across trauma exposure groups (no trauma, non-interpersonal trauma, interpersonal trauma), children did not differ significantly in their understanding of informed consent

TABLE 4. Mean (SD) for RRPQ-C Scale Scores by Trauma Groups.

	Interpersonal Trauma	Non-Interpersonal Trauma	No Trauma
Positive appraisals of research participation	4.47 (.95)*	4.62 (.63)*	4.76 (.61)*
Negative appraisals of research participation	1.12 (.37)*	1.05 (.38)*	1.12 (.48)*
Informed consent and trust in the research team	4.54 (.63)*	4.66 (.49)*	4.66 (.67)*
Understanding of his/her rights as a research participant	4.49 (.30)*	4.87 (.63)*	5.00 (.00)*
Cost-Benefit Ratio Difference Score	3.35 (1.17)	3.57 (.88)	3.64 (.96)

Note: Responses to scale items were coded as ‘yes’ = 5, ‘maybe’ = 3, and ‘no’ = 1; thus, subscale scores greater than 3 indicate agreement with scale items and scores less than 3 indicate disagreement. Asterisks (*) indicate that means scores differ from 3, the neutral rating on the scale, using a one-sample *t*-test ($p < .05$). Cost-Benefit Ratio Difference Score was calculated by subtracting negative appraisals from positive appraisals; higher values indicate more positive cost-benefit ratios.

TABLE 5. Zero-Order Correlations between Symptom Scores (PTSD, dissociation, anxiety, depression) and RRPQ-C subscales.

	Positive Appraisal	Negative Appraisal	Trust in Team Research	Rights as Participants
UCLA-PTSD	-.07	.02	-.00	.00
CDC	.05	.13	-.14	.09
CBCL Anxiety	-.05	-.02	-.07	.12
CBCL Depression	-.16*	-.01	-.00	.09

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

Note: Only correlations between RRPQ-C subscales and symptom measures are reported.

and trust in research team ($F(2,177) = 0.77, p = .47$) or understanding of his/her rights as a research participant ($F(2,177) = 1.43, p = .24$). None of the demographic variables or symptom scores was significantly associated with children's understanding of informed consent and trust in the research team or understanding of rights as a research participant.

Discussion

The current study examined reactions to participating in non-trauma-specific research in a sample of children between the ages of 7 and 12, specifically comparing across trauma exposure groups (no-trauma, non-interpersonal trauma, and interpersonal trauma). Analyses indicated that children's perceptions of participating in research did not vary significantly as a function of trauma exposure. Furthermore, the number of traumatic events experienced (collapsed across non-interpersonal and interpersonal events) was unrelated to children's perceptions of participating in the research study. A cost-benefit ratio score was calculated by subtracting the negative appraisal scores from positive (thus, higher scores indicate more positive appraisals of the research experience). Trauma-exposure groups did not differ on cost-benefit ratio scores. Thus, consistent with findings in the adult literature (see Newman & Kaloupek, 2004), children exposed to trauma show a positive cost-benefit ratio in response to research participation.

Turning to individual data, a minority (6.1%; $n = 11$) of children made one or more negative appraisals of the research process. Of these children, the majority rated positive items higher than the negative items, suggesting that for these children, the cost-benefit ratio was still positive. Therefore, we did not have evidence of a totally positive cost-benefit ratio for approximately 1.6% (or 3 of 186) of the children. We made additional queries when children endorsed negative responses to RRPQ-C

items. The follow-up responses indicate that the three children who reported negative cost-benefit ratios did so due to boredom rather than emotional distress. Taken together, the group and individual-level analyses suggest that children with trauma exposure perceive their participation in research with similar appraisals as children without trauma exposure.

To date, there have been few empirical investigations of how children exposed to trauma react to research participation; and no research (of which we are aware) comparing their reactions to non-exposed peers. Thus, the current study provides empirical data to help fill this gap by examining trauma exposed and non-exposed children's responses to the non-trauma specific research.

In addition to providing data on trauma-exposed children relative to non-exposed, this study is important in demonstrating that children generally make positive appraisals about research participation and generally understand the consent/assent information. All children in the sample were able to accurately complete a 'consent quiz,' suggesting that they fully understood the information provided during the consent/assent process. Additionally, children indicated on the RRPQ-C that they understood their rights as a participant so that they are able to refuse participation, stop at any time, skip parts of the study, and tell the research team about negative reactions to the study. Together, the current findings replicate earlier studies suggesting that most children understand their voluntary participation and are able to participate in the informed consent/assent process (Kassam-Adams & Newman, 2002, 2005). Thus, this current study also speaks to more general concerns about children as a special population in research.

Certain factors were associated with children's appraisals of participation. Positive appraisals were negatively correlated with age and estimated IQ such that the older the child or the higher his/her IQ score, the

less he/she made positive appraisals after participation. The association between age and positive appraisals found among school-aged children in the current study is inconsistent with previous findings (Kassam-Adams & Newman, 2005). The positive appraisal subscale was also negatively correlated with depression so that the more depressed a child, the less he/she made positive appraisals. Positive appraisals were not significantly correlated with symptoms of PTSD, dissociation, or anxiety, however. There were no significant associations between negative appraisals and any demographic variables or symptom scores. Additional research is needed to further examine these correlates of reactions to research participation before any definitive conclusions can be drawn.

Best Practices

Results from the current study provide evidence that children exposed to both interpersonal and non-interpersonal traumatic events make similar appraisals of costs and benefits of participating in general research to their non-exposed peers. The current study fills a gap in the empirical literature on ethical issues in research by focusing on children exposed to trauma; therefore, these data inform best practice considerations for researchers working with children. First, these findings suggest that there is no reason to assume that trauma-exposed children recruited from the community are inherently more vulnerable in the general research process than their non-exposed peers. Thus, general research conducted with trauma-exposed children from the community should be evaluated comparably to other child samples.

Second, we encourage investigators to use consent quizzes to assess children's understanding of the consent/assent information. The consent quizzes add minimal time to the informed consent process and allow the researcher to set an empirical standard for assessing understanding of the consent/assent information. The quiz also provides additional opportunities to interact with the child about consent/assent information, thereby insuring their understanding of their rights as participants. However, while we suspect the informed consent quiz may have improved children's understanding of the assent information and/or experiences more generally in the research process, we did not compare their understanding/experiences to children who did not complete the quiz. Thus, the impact of the consent quiz with children remains an empirical question (see DePrince & Chu, this issue, for a discussion of the

consent quiz procedure with adults). We look forward to additional research on the impact of consent quizzes on children's understanding of the consent/assent process.

Finally, we encourage researchers to continue the systematic assessment of perceptions of research participation, a step that can be easily incorporated into any ongoing research program. As we continue to compile systematic observations regarding children's perceptions of research participation, we can better inform procedures targeted at protecting children's rights and minimizing risk.

Research Agenda

Several limitations in the current methods should be addressed in future research. First, researchers should continue to examine individual difference factors, including demographic variables, in appraisals of research. The current sample involved ethnically- and economically-diverse participants; however future research should also examine whether trauma-exposed children referred through clinics or inpatient units, who presumably would report higher levels of distress than seen in this sample, are at additional risk relative to their peers. The current findings suggested some potential symptom correlates (e.g., depression) to perceptions of research participation. A wider range of symptom levels in future studies may provide useful information on associations between research participation appraisals and symptom levels.

Second, children made verbal reports of their perceptions of participation to the same experimenter who conducted the session. The direct disclosure of this information to the examiner may have biased children's responses. In future research, older children might be encouraged to respond the questions privately in a paper and pencil version; or children of all ages could be asked to make verbal responses to a different experimenter.

Third, future studies should target methods to better understand the beliefs of the subgroup of children who made negative appraisals about some aspect of the research process. Better understanding of the characteristics and beliefs of such subgroups might help researchers to identify them in advance and initiate procedures to reduce any related potential risk. Thus, future research should include systematic recording and coding of follow-up questions when children make negative responses. While our study found that the majority of children did not report any negative reactions, a few

children reported being upset or sorry for having participated in the study. While we did ask follow-up questions when children made negative responses, we did not systematically record these responses for additional coding.

Finally, future research should evaluate children's responses to trauma-related research. In the current study, children did not answer questions about trauma exposure. Stimuli were neutral, though some tasks involved negative emotional stimuli. This study provided important information that children exposed to traumas are not inherently more vulnerable than their peers, but does not tell us to how trauma-exposed children appraise studies with trauma-specific questions or stimuli.

Educational Implications

In the absence of empirical data, researchers have worried that trauma-exposed children are at relatively greater risk when they are included in research, whether trauma-relevant or general studies (Becker-Blease & Freyd, 2006). On the one hand, this concern makes sense insofar as trauma exposure is associated with a range of deleterious emotional and behavioral consequences. On the other hand, few empirical studies have tackled the important questions of how children appraise and respond to research generally. Just as researchers have started to educate themselves and IRBs about responses to research participation among adults, the field must work now to extend these findings to children. In an effort to do so, the current study found no evidence that trauma-exposed children (whether exposed to interpersonal or non-interpersonal traumas) are more vulnerable to the possible costs of research than their non-exposed peers.

To educate relevant stakeholders about these findings, we recommend that researchers summarize past research on cost-benefit ratios in trauma research, including the available data with children as well as adults, in documents supporting the protocols presented to their research ethics committee. Further, we strongly recommend the ongoing and systematic collection of children's responses to research participation. These data should be disseminated to the investigators' local IRB through the annual renewal process; and in other professional venues as appropriate. We also recommend including this information in the consent process to educate parents about the research process with children.

Acknowledgments

This project was funded by the University of Denver Psychology Department GRAF Research Grant to the first author; start-up funds and the University of Denver PROF Award to the second author. We wish to thank Melody Combs, Rheena Pineda, Jackie Rea, Julia Burrell-Smith, Reilly Anderson and undergraduate research assistants for project assistance; and community agencies for assistance with recruitment.

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