Trauma-Relevant Characteristics in a University Human Subjects Pool Population: Gender, Major, Betrayal, and Latency of Participation

M. Rose Barlow, PhD
Lisa DeMarni Cromer, MS

ABSTRACT. This study of over 700 participants is the first to examine whether students in a university human subjects pool (HSP) population differ systematically by gender, major, and participation time (early versus late in the term) on characteristics relevant to trauma research. Males and females reported equal amounts of overall child and adult trauma, and equal amounts of low-betrayal trauma. Females reported more child and adult high-betrayal trauma (i.e., trauma perpetrated by someone close) than did males. Females also reported more current post-traumatic stress disorder (PTSD) symptoms than did males. Psychology majors reported more high-betrayal trauma and low-betrayal traumatic events in childhood, as well as more adult low-betrayal trauma, than did

M. Rose Barlow and Lisa DeMarni Cromer are affiliated with the Department of Psychology, University of Oregon, Eugene, OR.

Address correspondence to: M. Rose Barlow, PhD, Department of Psychology, 1227 University of Oregon, Eugene, OR 97403 (E-mail: mbarlow@dynamic.uoregon.edu).

The authors would like to thank the members of the Dynamics Lab at the University of Oregon for helpful comments on this project, and Joanna Lahey for suggestions on the paper. They also thank two anonymous reviewers for their comments on an earlier draft of this paper.

Journal of Trauma & Dissociation, Vol. 7(2) 2006
Available online at http://www.haworthpress.com/web/JTD

doi:10.1300/J229v07n02_05

non-majors. Dissociation was correlated with all types of trauma. Current age was positively correlated with reporting trauma, regardless of age at which the trauma was experienced. Additionally, students who participated later in the term were, on average, more than a year older than those who participated earlier in the same term. There was no significant difference between early and late participants on any measure of trauma, PTSD symptoms, or dissociation. Implications for the use of HSPS in studying trauma and future research directions are addressed.

KEYWORDS. Research participation, college students, psychology majors, gender and betrayal, trauma history, sampling bias, validity

In the past 20 years there has been a dramatic increase in research examining psychological trauma and its consequences. Across the growing field of trauma studies, a variety of different participant samples have been recruited, including single participants for case studies (e.g., Williams, Haines, & Sale, 2003), clinical or patient samples of various sizes (e.g., Carlson, Dalenberg, Armstrong, Daniels, Loewenstein, & Roth, 2001; McFarlane, Bookless, & Air, 2001), community samples (e.g., Flett, Kazantzis, Long, MacDonald, & Millar, 2004; Ullman & Siegel, 1996), and college student samples (e.g., Dalenberg & Palesh, 2004; Freyd, DePrince, & Zurbriggen, 2001), which are often easier to access than community samples, but which vary greatly in their level of self-selection and representativeness.

The complexities of research in this field make a multi-method approach not only desirable but necessary. Each type of sample has benefits and drawbacks. The present study sought to examine whether demographic characteristics unique to college samples present specific drawbacks for generalizing findings to other populations. On the face of it, college students have limited life experience compared with community and mental health samples. College samples have limited age ranges, and college students have relatively high social status and educational levels compared with the rest of the country. Therefore, one may predict that participants in these samples will react to stimuli and events differently than would a community or hospitalized sample. These limitations could result in measurement error, such as ceiling or

floor effects, or a restricted distribution of scores. Restriction of range problems may result in limited generalizability. Only by combining different types of samples can researchers assess the entire distribution. Because of the potential for measurement errors, it is important to review and extend research about research participants, particularly for trauma populations.

There has also been a limited amount of research addressing characteristics of Human Subject Pool (HSP) participants from colleges and universities. Some studies, reviewed below, have examined characteristics that impact participation latency, but these studies are of limited scope and mostly have not taken into account variables that are of interest to trauma researchers. In fact, none of the studies about HSPs reviewed in the following section included measures of trauma-relevant participant variables when they assessed personality variables and performance on cognitive tasks. Previous studies have also produced contradictory findings, and they often lacked adequate sampling size and representativeness of the research population. Nevertheless, these studies do reveal some characteristics that are unique to college HSPs.

PREVIOUS RESEARCH ON HSP CHARACTERISTICS

Many psychological studies are based on college student samples from HSPs. Most researchers, including the authors of this paper, assume that samples from this pool contain participants that are similar to each other in their distributions of many important variables. Researchers have attempted to evaluate this assumption since the 1960s (e.g., Blatt & Quinlan, 1967; Underwood, Schwenn, & Keppel, 1964); however, it is difficult to interpret the results of these studies today, because the field of psychology and the makeup of college student populations have changed drastically in the past 40 years. In addition, colleges and universities have very different methods of running their HSPs, with some having mandatory participation in an HSP or equivalent activity, while others have optional participation to earn extra credit. Those HSP procedures that present the most serious challenge to the external validity of their research allow students to sign up for experiments at any time of the day, at any point in the term, and provide students with descriptions of the experiments from which to choose. The most rigorously scientific HSP procedures randomly assign students to participate in experiments throughout the term based on their schedules, and provide no description of the study beforehand. The University of Oregon

falls in the middle of these extremes by allowing students the choice of time and date of their HSP participation, but by not providing study titles or any other information about the study, which otherwise could bias students' selections.

Some articles provide support for the existence of problematic differences among different samples of participants from the same HSP. Almost all of these studies used a sign-up procedure that allowed or even encouraged students to self-select into experiments based on temporal factors, study titles, or even study descriptions. Jackson, Procidano, and Cohen (1989) found that these procedures resulted in students selecting times of day to participate that fit with their personalities. Zelenski, Rusting, and Larsen (2003) agreed, finding that participation early in the term was related to the personality variables of being a morning person, seeking sensation, and achievement motivation. However, in this study the sample size was not large ($N = 80$), and the times of experiment participation were separated by less than a month. Other factors that impacted short latencies for participation included a need for personal control and academic achievement orientation (Evans & Donnerstein, 1974; Roman, Moskowitz, Stein, & Eisenberg, 1995). More recently, personality researchers using empirically validated measures have demonstrated that people who are compliant and who are less open to new experience generally participate earlier in the term (Aviv, Zelenski, Rallo, & Larsen, 2002; Roman et al., 1995). Extroverts also generally participate later in the term than do introverts (Aviv, et al., 2002; Liberty, 1993), and females participate earlier in the term than do males (Aviv et al., 2002; Cooper, Baumgardner, & Strathman, 1991; Roman et al., 1995).

Performance on cognitive lab tasks has also been evaluated for differences based on participation latency. Richert and Ward (1974) concluded that differential performance at different times during the semester was only a problem for boring tasks, with later participants having lower performance, but this problem did not arise for interesting tasks. Richter, Wilson, Milner, and Senter (1981) found that two samples from the same HSP had significant differences on synonym substitution and serial learning tasks, but the differences were in opposite directions and both sample sizes were small ($N = 34$ in each of two samples). Wang and Jentsch (1998) found that there were no effects of time of participation on cued recall, despite slight differences in motivation and some personality traits between early and late participants. Several other studies also found that cognitive tasks were unaffected by participation latency (Langston, Ohnesorge, Kruley, & Haase, 1994; Underwood et al., 1964).

Finally, Cooper and colleagues (1991) performed an impressive set of three studies, with replications across two universities in different states during three different semesters. They concluded that, although there were a few significant differences on personality and demographic variables between early- and late-participating samples, these differences were so small and inconsistent across sites that they could safely be ignored.

RATIONALE FOR CURRENT STUDY

Often researchers who use HSPs do not consider trauma prevalence rates or the effects of trauma history on academic performance. Researchers assume that data collected over the course of a term or semester are collected from participants who have approximately equal distributions of many variables that could affect results, such as gender, year in school, trauma history, and amount of dissociation. In fact, a plausible hypothesis is that some of these variables are *not* evenly distributed among students who participate early versus late in the term. Students with high levels of dissociation may be more likely to "space" the assignment and complete their subject hours at the end of the term, when deadlines force them to act. Students with extensive histories of trauma may function less well and complete requirements late. They may also drop out of school and thus be over-represented in freshman samples and under-represented in later cohorts. Type of trauma may also impact research participation latency or impact participants cognitively. According to Freyd's (1996) Betrayal Trauma Theory, remaining unaware of trauma that is perpetrated by caregivers allows victims to retain necessary attachment relationships. Given this theory, one would expect that younger students, who are dependent on parents financially, will be less likely to acknowledge interpersonal or betrayal trauma than would older or non-traditional students.

Psychology majors are more likely to be women than men (Harton & Lyons, 2003; McCray, King, & Bailly, 2005). Women are also up to twice as likely as men to develop PTSD (Simmons & Granvold, 2005; Tolin & Foa, 2002; Walker, Carey, Mohr, Stein, & Seedat, 2004). Because females experience more interpersonal trauma in their lifetimes than do males (e.g., DePrince & Freyd, 2002; Flett et al., 2004), it is possible that psychology research pools contain an abundance of female trauma survivors. It is also possible that trauma survivors may be attracted to psychology and therefore may bias the human subjects pool.

Finally, in considering research with a human subjects pool, an important question is how psychologically oriented or research-savvy the participants are. That is, are they primarily psychology majors? This important question has not been asked in earlier studies.

In order to confidently generalize research findings, and to be assured of ecological validity for studies done with HSPs, some very basic questions should be examined. Are participants mostly women? Are they mostly psychology majors or intended majors? What types of trauma histories do they bring to HSPs and do those trauma histories and levels of dissociation impact their participation latency such that sampling in only certain parts of the term leads to biased results? Does age impact reporting of interpersonal trauma history?

The present study used data from the Human Subjects Pool for one term at the University of Oregon, a large state school. Unlike previous studies, the present study used the entire population of the HSP, rather than a small and potentially non-representative sample. By examining the entire population, we have provided a foundation for understanding the results of studies using samples drawn from it. This foundation may enable future researchers to address questions of validity and possible sampling bias. The current research has implications for understanding and interpreting research performed with HSPs in general, which is a common practice in psychological studies at universities and colleges in North America.

METHODS

Participants

All participants in the human subjects pool ($N = 810$) were eligible to participate in a pretest procedure from which the data for this study were obtained. Most participants were students enrolled in introductory Psychology and Linguistics classes and participated in order to receive partial credit toward a research requirement for their classes ($N = 730$). Eighty students in upper division Psychology classes participated for extra credit. Of these 810 students, 765 participated in the pretest, although these numbers varied in the analyses because of missing data (students were permitted to "decline to answer" each question).

There were 487 females, 269 males, 9 unknown. Participants' stated ethnicity was 79.6% Caucasian, 1.2% African American, 1.1% Native American, 7.2% Asian/Pacific Islander, 4.2% Hispanic, 5.2% other,

and 1.5% declined to answer. Mean age for participants was 20.8 years (*SD* = 3.75 years), with a range of 17 to 55 years. Forty-eight percent of participants were freshmen, 23.8% sophomores, 18.2% juniors, 8.6% seniors and 1.4% other. Twenty-nine percent of students said that they were either currently or planning to be Psychology majors. Psychology majors did not differ from non-majors on age or ethnicity. There was also no age difference between males and females.

Measures

The Brief Betrayal Trauma Survey (BBTS; Freyd & Goldberg, 2004; Goldberg & Freyd, in press), is a 12-item self-report inventory of low-, medium- and high-betrayal trauma experiences. An example of a low-betrayal trauma is "Been in a major earthquake, fire, flood, hurricane, or tornado that resulted in significant loss of personal property, serious injury to yourself or a significant other, the death of a significant other, or the fear of your own death." A high-betrayal trauma experience is "You were made to have some form of sexual contact, such as touching or penetration, by someone with whom you were very close (such as a parent or lover)." An example of a medium-betrayal trauma experience is "You were made to have such sexual contact by someone with whom you were not close." Scoring on the BBTS used a four-point scale for measuring frequency of events over the lifetime, with 0 = Never, 1 = Once, 2 = Twice, 3 = More than that. Participants responded twice to each question for experiences (1) before age 18 and (2) at age 18 and older. The BBTS has good test-retest reliability (Goldberg & Freyd, in press).

For space reasons, a slightly shortened version of the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) was used to assess general dissociation. Items that were removed were not part of the "pathological" dissociation taxon and were also of limited utility in discriminating low from high dissociators in previous HSP samples at this university. The DES measures a variety of dissociative tendencies including amnesia, derealization, depersonalization, absorption, and imaginative involvement. It has been used extensively with a wide range of populations in countries around the world and has been found to have strong reliability and validity (see Briere, 1997; Carlson & Putnam, 1993 for reviews). This scale was not designed for diagnostic use, and the general population of adults usually scores in a narrow range below 10 (Carlson & Putnam, 1993; Carlson et al., 1993). For the present study, we utilized the mean score for all DES items presented. Respondents

indicated the percentage of time that each type of experience happens to them when they are not under the influence of drugs or alcohol, from 0% to 100% of the time.

Post-Traumatic Stress Disorder (PTSD) symptoms were measured with four questions that asked whether participants were currently experiencing nightmares, avoidance, hypervigilance, and numbness due to a traumatic event.

Procedure

Participants completed the measures as part of an IRB-approved online pretesting that is administered by the University of Oregon Psychology Department human subject pool. Software for the survey is part of a package licensed from Sona Systems; the larger package is used to administer the human subject pool experiment sign-ups. The pretest was available to participants to complete when they created their user accounts in the electronic sign-up system. They could complete the survey only once during the 10-week term, and they were not permitted to preview the survey before electing to participate. Participation was optional and there was no penalty for declining to participate. All participants gave informed consent. The pretest was a battery of approximately 12 short instruments from as many researchers. It took participants 20 to 30 minutes to complete it. Measures were presented in a computer-randomized order for each participant.

RESULTS

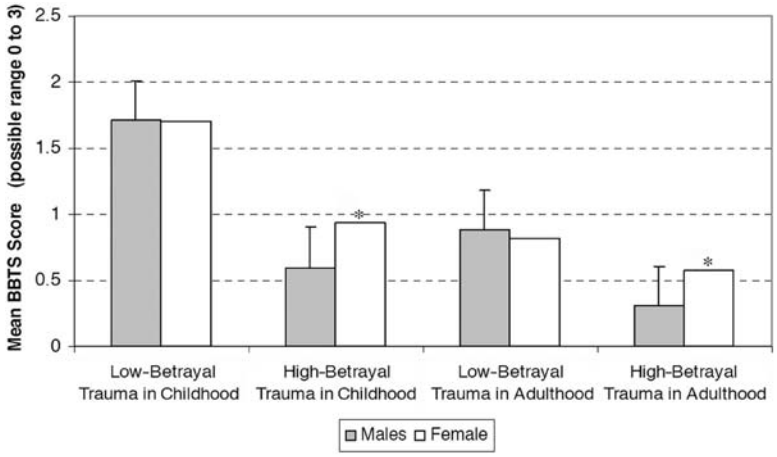
Gender, Major, and Betrayal Trauma

In order to examine differences between men and women for trauma history, an ANOVA was performed with gender as the independent variable and amount of childhood trauma and amount of adult trauma as the two dependent variables. All tests are two-tailed. There were no differences between males and females on amount of reported adult trauma (Cohen's d effect size = .085) and childhood trauma (Cohen's d = .09). In order to examine whether there were differences in the amount of betrayal trauma and non-betrayal trauma between the genders, a MANOVA was performed with Child High-Betrayal, Child Low-Betrayal, with Adult High-Betrayal and Adult Low-Betrayal trauma scores on the BBTS as the dependent variables, and gender and

major (Psychology or Other) as between subject variables. Consistent with the ANOVA, there were no differences for low-betrayal traumas in both adulthood and childhood between the genders ($p > .05$). As predicted, however, females had experienced more high-betrayal trauma in childhood than did males, $F(1, 705) = 5.09$, $p < .05$, $d = .27$, and females experienced more high-betrayal trauma in adulthood than did males, $F(1,705) = 4.17$, $p < .05$, $d = .18$ (see Figure 1). Chi-square tests were then conducted in order to examine whether there is a larger percentage of women than of men experiencing these traumas, or whether these findings were based on some women reporting more incidents of betrayal trauma. Chi-square tests duplicated the findings above. Females were more likely than males to experience high-betrayal trauma in childhood χ^2 (1, $N = 738$) = 5.77, $p < .02$ and in adulthood χ^2 (1, $N = 740$) = 3.82, $p < .05$. In addition to having experienced more trauma, more females ($n = 212$) than males ($n = 93$) endorsed having current PTSD symptoms χ^2 (1, $N = 756$) = 8.54, $p = .01$.

People who declined to answer any high-betrayal item on the BBTS but who answered low-betrayal items ($n = 22$, "non-responders") were compared with those who answered all BBTS items ("responders"). Tukey's HSD indicated that these non-responders were older ($p < .05$) and had higher dissociation scores ($p < .05$) than responders who reported no trauma. Non-responders were not statistically different on

FIGURE 1. Trauma Type by Gender



*Indicates statistically significant gender differences between pairs, $p < .05$.

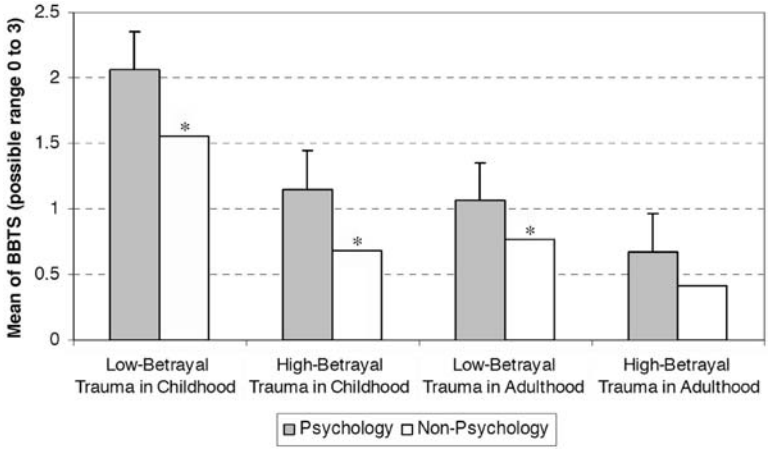
age or dissociation from responders who reported any high-betrayal trauma. There was no difference on year in school between any of these three groups.

Major in school was also a significant predictor of trauma. Psychology majors experienced more Child High-Betrayal trauma, $F(1, 705) = 7.61$, $p < .01$, $d = .27$, Child Low-Betrayal trauma, $F(1, 705) = 8.19$, $p < .01$, $d = .20$, and more Adult Low-Betrayal trauma, $F(1, 705) = 6.89$, $p < .01$, $d = .17$, than did non-majors. Differences in Adult High-Betrayal trauma did not reach statistical significance, $F(1, 705) = 3.14$, $p = .08$. There was no interaction between gender and major, all $p > .10$ (see Figure 2).

Age, Trauma, and Dissociation

Pearson's correlations (see Table 1) demonstrated that age and DES scores were significantly correlated with PTSD symptoms and with the four measures of trauma (all $p < .01$); however, DES and age were not correlated with each other, possibly because most participants were approximately the same age. In a univariate ANOVA, dissociation scores did not differ between males and females ($p > .10$), or majors versus non-majors ($p > .10$), and there were no significant interactions.

FIGURE 2. Trauma Type by College Major



*Indicates statistically significant differences by major between pairs, $p < .01$.

TABLE 1. Correlations Between Betrayal Trauma, Age, Dissociation, and PTSD Symptoms

	Child High-Betrayal	Adult Low-Betrayal	Adult High-Betrayal	Age	Dissociation	PTSD Symptoms
Child low-betrayal	.501**	.630**	.381**	.159**	.262**	.316**
Child high-betrayal		.441**	.626**	.203**	.205**	.223**
Adult low-betrayal			.513**	.286**	.280**	.309**
Adult high-betrayal				.204**	.183**	.242**
Age					.024	.094*
Dissociation						.283**

**Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed).

Sampling Issues and Latency of Participation

In order to examine whether there are differences between subjects who participate in research early in the school term as compared to later in the term, a MANOVA was run with time of participation (by the end of week 5 versus the end of week 10 of a 10- week term) as the between subjects variable and age, the four trauma variables, DES scores and PTSD ratings as the dependent variables. There was a significant difference for age, with subjects participating later in the term being older (M = 21.15 years, SD = 4.69) than participants participating earlier in the term (M = 19.88, SD = 3.5), $F(1, 699) = 9.6$, $p < .01$, $d = .66$. There were no differences on the other variables ($p > .10$). A greater proportion of males than of females participated later in the term, χ^2 (1) = 5.05, $p < .05$.

DISCUSSION

This study of over 700 participants is the first to examine whether students in a university HSP population differ systematically by gender, major, and participation time (early versus late in the term) on characteristics relevant to trauma research. Although males and females reported equal amounts dissociation, overall child and adult trauma, and equal amounts of low-betrayal trauma, females reported more child and adult high-betrayal trauma than did males. This study, therefore,

replicated earlier findings that females experience higher levels of betrayal and interpersonal trauma throughout their lives than do males (Flett et al., 2004; Freyd & Goldberg, 2004; Walker et al., 2004). Females also reported more current PTSD symptoms than did males.

Psychology majors reported more high-betrayal trauma and low-betrayal traumatic events in childhood, as well as more adult low-betrayal trauma, than did non-majors. There was no significant gender by major interaction. It is plausible to hypothesize that students who are aware of their own trauma want to understand and make sense of their experience, both from the perspective of their individual situations or families and from the broader social perspective of understanding the societal effects of trauma and how to prevent them. Further research is needed to examine what factors lead students to declare psychology as their major. One study of HSP characteristics that asked a single question about lifetime sexual abuse and one about lifetime physical abuse found that Psychology majors did not differ from non-majors on either question (King, Bailly, & Moe, 2004). In order to address this apparent discrepancy between the King et al. (2004) study and the present research, we conducted a post-hoc ANOVA using the physical abuse and sexual abuse BBTS questions as two dependent variables. As in King and colleagues, there was no significant difference on the two items for majors versus non-majors ($p > .10$). This additional analysis underscores the importance of examining betrayal trauma and the closeness of the perpetrator to the research participant. Because the amount of reported betrayal trauma is significantly higher for Psychology majors, there could be something about trauma perpetrated by a close other that attracts people to Psychology courses. Alternatively, taking Psychology courses may increase awareness of trauma. This question is important to research in the future.

In addition, age was significantly positively correlated with reporting trauma but not with dissociation. Age is generally correlated with experiencing traumatic events: the older one gets, the more opportunities one has for negative events to occur. However, this effect still held true when looking only at childhood trauma, which implies that greater age is associated with a higher likelihood to *report*, rather than to have experienced, childhood trauma. One possible reason for this effect is that older and/or more advanced students may be less emotionally and financially dependent on caregivers and thus may have acquired a different and more objective perspective on their childhoods. According to Betrayal Trauma Theory (Freyd, 1996), more independence would lead

to an increased ability to be aware of childhood abuse. Future research will address this issue (Cromer, Barlow, & Freyd, in preparation).

Dissociation was positively correlated with trauma. This finding is what we would have predicted, based on a well-established relationship between dissociation and trauma (e.g., Chu & Dill, 1990; Draijer & Langeland, 1999). Dissociation was not correlated with age, so the trauma-dissociation relationship was not impacted by the higher reporting levels of older participants. Partial correlations of DES, trauma and PTSD were still significant when age was controlled for (both $p < .001$).

There was a difference between early and late participants on age, with later participants being more than a year older than participants from earlier in the same term. A greater proportion of males than females participated early in the term, which replicated previous findings that females participate earlier (Aviv et al., 2002; Cooper, Baumgardner, & Strathman, 1991; Roman et al., 1995). Reported trauma, dissociation, and PTSD symptoms did not vary across the term.

Approximately 70% of the students in the HSP were not Psychology majors. The majority of students in the HSP were drawn from introductory psychology classes, which fulfill university general education requirements. Almost half were first-year students. In other words, these students were not savvy research participants; it was not a group that came in to studies because they knew a lot about the topic being studied. As such, they may be a "cleaner" sample for testing psychological hypotheses than samples of people who are recruited based on their interest in participating in research, as may be the case with community samples.

Limitations and Directions for Future Research

One limitation of this study is the correlational research design, which limits the ability to make causal inferences. It would be interesting for a future longitudinal study to examine characteristics of students entering college and follow them as they progress through their courses, in order to see whether there are predictive differences in identifying people who elect to become Psychology majors or whether taking Psychology classes impacts responses to research questions. A second limitation is that the data were collected from only two intervals during a 10-week term. It would be helpful to conduct a more fine-grained analysis with data collected at weekly intervals throughout the term.

Researchers at colleges and universities on semester systems may find the present intervals difficult to relate to a 16-week term.

The current study found that older participants reported more childhood and lifetime trauma. In order to elucidate the mechanism that drives this effect, future research should longitudinally examine factors that impact trauma reporting over time. One hypothesis is that as students get older, they become less financially dependent on their parents. According to Betrayal Trauma Theory, increasing financial independence would result in higher rates of awareness of childhood betrayal trauma (Cromer, Barlow, & Freyd, in preparation).

CONCLUSIONS

Human subject pools that allow participants to select studies based on scheduling convenience of day and time, but which do not provide study descriptions or titles, seem to do a good job of achieving participant groups that are similar on many demographic variables. In testing the entire HSP using an online survey, which students completed voluntarily at some point during a school term, there were no differences for response latency (early versus late in the term) on a variety of characteristics. Further, in examining other details of the subject population, we found that students taking introductory psychology classes were generally not Psychology majors and did not intend to be Psychology majors. The majority were first-year students. It is likely that these participants were relatively naïve about psychological theories and research hypotheses. When examining trauma history of participants, we found an unexpected positive correlation between participants' age and reporting of trauma that occurred before the age of 18. This finding is an important consideration for researchers who are doing limited sampling from college students, as trauma is generally under-reported (e.g., Fergusson, Horwood, & Woodward, 2000; Williams, 1994), and this study shows that younger participants in particular may especially under-report their experiences of trauma. If researchers carefully sample the populations to which they wish to generalize their results, they should not have problems with sampling issues in general.

Additionally, researchers have found that asking about trauma is not significantly distressing to participants, even for those who have experienced traumatic events (e.g., Carlson, Newman, Daniels, Armstrong, Roth, & Loewenstein, 2003; DePrince & Freyd, 2004; Kassam- Adams & Newman, 2002; Newman, Walker, & Gefland, 1999; Walker,

Newman, Koss, & Bernstein, 1997). Participants not only report that they are not distressed by the questions, but they also report that they find these questions particularly valuable and important compared with other HSP studies (DePrince & Freyd, 2004). It appears that researchers can perform rigorous, generalizable and ecologically valid trauma research with HSPs, and they can do so in good conscience, furthering our scientific understanding of trauma.

REFERENCES

Aviv, A. L., Zelenski, J. M., Rallo, L., & Larsen, R. J. (2002). Who comes when: Personality differences in early and later participation in a university subject pool. *Personality & Individual Differences, 33*, 487-496.

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous & Mental Disease, 174,* 727-735.

Blatt, S. J., & Quinlan, P. (1967). Punctual and procrastinating students: A study of temporal parameters. *Journal of Consulting Psychology, 31,* 169-174.

Briere, J. (1997). Psychological assessment of adult posttraumatic states. Washington, DC, US: American Psychological Association.

Carlson, E. B., Dalenberg, C., Armstrong, J., Daniels, J. W., Loewenstein, R., & Roth, D. (2001). Multivariate prediction of posttraumatic symptoms in psychiatric inpatients. *Journal of Traumatic Stress, 14*, 549-567.

Carlson, E. B., Newman, E., Daniels, J. W., Armstrong, J., Roth, D., & Loewenstein, R. (2003). Distress in response to and perceived usefulness of trauma research interviews. *Journal of Trauma & Dissociation, 4*, 131-142.

Carlson, E. B., & Putnam, F. W. (1993). An update on the Dissociative Experiences Scale. *Dissociation: Progress in the Dissociative Disorders, 6,* 16-27.

Carlson, E. B., Putnam, F. W., Ross, C. A., Torem, M., et al. (1993). Validity of the Dissociative Experiences Scale in screening for multiple personality disorder: A multicenter study. *American Journal of Psychiatry, 150*, 1030-1036.

Chu, J. A., & Dill, D. L. (1990). Dissociative symptoms in relation to childhood physical and sexual abuse. *American Journal of Psychiatry, 147*, 887-892.

Cooper, H., Baumgarder, A. H., & Strathman, A. (1991). Do students with different characteristics take part in psychology experiments at different times of the semester? *Journal of Personality, 59,* 109-127.

Cromer, L. D., Barlow, M. R., & Freyd, J. J. (in preparation). Financial dependence affects trauma reporting: A caution for researchers.

Dalenberg, C. J., & Palesh, O. G. (2004). Relationship between child abuse history, trauma, and dissociation in Russian college students. *Child Abuse & Neglect, 28,* 461-474.

DePrince, A. P., & Freyd, J. J. (2002). The intersection of gender and betrayal in trauma. In R. Kimerling, P. Ouimette, & J. Wolfe (Eds.), *Gender and PTSD* (pp. 98-113). New York: Guilford Press.

DePrince, A. P., & Freyd, J. J. (2004). Costs and benefits of being asked about trauma history. *Journal of Trauma Practice, 3(4)*, 23-35.

Draijer, N., & Langeland, W. (1999). Childhood trauma and perceived parental dysfunction in the etiology of dissociative symptoms in psychiatric inpatients. *American Journal of Psychiatry, 156*, 379-385.

Evans, R., & Donnerstein, E. (1974). Some implications for psychological research of early versus late term participation by college subjects. *Journal of Research in Personality, 8*, 102-109.

Fergusson, D. M., Horwood, L. J., & Woodward, L. J. (2000). The stability of child abuse reports: A longitudinal study of the reporting behavior of young adults. *Psychological Medicine, 30*, 529-544.

Flett, R. A., Kazantzis, N., Long, N. R., MacDonald, C., & Millar, M. (2004). Traumatic events and physical health in a New Zealand community sample. *Journal of Traumatic Stress, 15*, 303-312.

Freyd, J. J. (1996). Betrayal Trauma: The logic of forgetting childhood abuse. Cambridge, MA: Harvard University Press.

Freyd, J. J., DePrince, A. P., & Zurbriggen, E. L. (2001). Self-reported memory for abuse depends upon victim-perpetrator relationship. *Journal of Trauma & Dissociation, 2*, 5-17.

Freyd, J. J. & Goldberg, L. R. (2004). Gender difference in exposure to betrayal trauma. Presentation at the 20th Annual Meeting of the International Society for Traumatic Stress Studies, New Orleans, LA, November 14-18, 2004.

Goldberg, L. R. & Freyd, J. J. (in press). Self-reports of potentially disturbing experiences in an adult community sample: Gender differences and test-retest stabilities of the items in Brief Betrayal-Trauma Survey. *Journal of Trauma & Dissociation.*

Harton, H. C., & Lyons, P. C. (2003). Gender, empathy, and the choice of the psychology major. *Teaching of Psychology, 30*, 19-24.

Jackson, J. M., Procidano, M. E., & Cohen, C. J. (1989). Subject pool sign-up procedures: A threat to external validity. *Social Behavior & Personality, 17*, 29-43.

Kassam-Adams, N., & Newman, E. (2002). The reactions to research participation questionnaires for children and for parents (RRPQ-C and RRPQ-P). *General Hospital Psychiatry, 24*, 336-342.

King, A. R., Bailly, M. D., & Moe, B. K. (2004). External validity considerations regarding college participant samples comprised substantially of psychology majors. In S. P. Shohov (Ed.), *Advances in psychology research, Vol. 29* (pp. 71-85). Hauppauge, NY, US: Nova Science Publishers, Inc.

Langston, W., Ohnesorge, C., Kruley, P., & Haase, S. J. (1994). Changes in subject performance during the semester: An empirical investigation. *Psychonomic Bulletin & Review, 1*, 258-263.

Liberty, H. J. (1993). The relationship between extraversion and time of data collection. *Personality & Individual Differences, 14*, 835-836.

McCray, J. A., King, A. R., & Bailly, M. D. (2005). General versus gender-specific attributes of the psychology major. *The Journal of General Psychology, 132*, 139-150.

McFarlane, A. C., Bookless, C., & Air, T. (2001). Posttraumatic stress disorder in a general psychiatric inpatient population. *Journal of Traumatic Stress, 14*, 633-645.

Newman, E., Walker, E. A., & Gefland, A. (1999). Assessing the ethical costs and benefits of trauma-focused research. *General Hospital Psychiatry, 21*, 187-196.

Richert, A. J., & Ward, E. F. (1976). Experimental performance and self-evaluation of subjects sampled early, middle, and late in an academic term: Sex and task. *Psychological Reports, 39*, 135-142.

Richter, D. O., Wilson, S. D., Milner, M., & Senter, R. J. (1981). Some differences among students volunteering as research subjects. *Bulletin of the Psychonomic Society, 17*, 261-263.

Roman, R. J., Moskowitz, G. B., Stein, M. I., & Eisenberg, R. F. (1995). Individual differences in experiment participation: Structure, autonomy, and the time of the semester. *Journal of Personality, 63*, 113-138.

Simmons, C. A., & Granvold, D. K. (2005). A cognitive model to explain gender differences in rate of PTSD diagnosis. *Brief Treatment and Crisis Intervention, 5*, 290-299.

Tolin, D. F., & Foa, E. B. (2002). Gender and PTSD: A cognitive model. In R. Kimerling, P. Ouimette, & J. Wolfe (Eds.), *Gender and PTSD* (pp. 76-97). New York: Guilford Press.

Ullman, S. E., & Siegel, J. M. (1996). Traumatic events and physical health in a community sample. *Journal of Traumatic Stress, 9*, 703-719.

Underwood, B. J., Schwenn, E., & Keppel, G. (1964). Verbal learning as related to point of time in the school term. *Journal of Verbal Learning & Verbal Behavior, 3*, 222-225.

Walker, E. A., Newman, E., Koss, M., & Bernstein, D. (1997). Does the study of victimization revictimize the victims? *General Hospital Psychiatry, 19,* 403-410.

Walker, J. L., Carey, P. D., Mohr, N., Stein, D. J., & Seedat, S. (2004). Gender differences in the prevalence of childhood sexual abuse and in the development of pediatric PTSD. *Archives of Women's Mental Health, 7*, 111-121.

Wang, A. Y., & Jentsch, F. G. (1998). Point-of-time effects across the semester: Is there a sampling bias? *The Journal of Psychology, 132*, 211-219.

Williams, C. L., Haines, J., & Sale, I. M. (2003). Psychophysiological and psychological correlates of dissociation in a case of dissociative identity disorder. *Journal of Trauma & Dissociation, 4*, 101-118.

Williams, L. M. (1994). Recall of childhood trauma: A prospective study of women's memories of child sexual abuse. *Journal of Consulting & Clinical Psychology, 62*, 1167-1176.

Zelenski, J. M., Rusting, C. L., & Larsen, R. J. (2003). Consistency in the time of experiment participation and personality correlates: A methodological note. *Personality & Individual Differences, 34*, 547-558.

RECEIVED: 08/10/05
REVISED: 09/28/05
ACCEPTED: 09/29/05