Case Study in Substance Abuse

Approximately 8000 articles were retrieved from PubMed representing substance abuse research in 2003-2004. A knowledge base dealing with over 205,000 ideas was developed. About 2100 research proposals were entered into CRISP for the first 8 months of 2005. These entries represent grants initially funded in 2005 as well as those receiving continuing funding. A grant abstract was randomly selected from the set that were initially funded in 2005.

Figure 1. Terms and Ideas from CRISP Abstract Linked with Substance Abuse.

Figure 1 shows the ideas in the abstract. [CRISP 2005--1R03DA017668] The terms have been classified arbitrarily into categories. The assignment was based on meaning and/or function. All of the terms were linked to substance abuse in the knowledge base.

Figure 2 shows the terms and ideas from the first sentence of the abstract. One idea – prevention and stress -- was not in the knowledge base.
Figure 2. Terms and Ideas in the First Sentence.

Figure 3. Terms and Ideas From Last Sentence.

Figure 3 shows the terms and ideas from the last sentence of the CRISP abstract. Three of the missing ideas involved coping. These were, respectively, coping with children, violence and family. The last missing idea involved trauma and community.

Of interest, is the possibility that these missing ideas were not essential to the proposed study. That is, the new grant application described the development of a knowledge base involving apparently previously studied measures in a purposive sample of women. The
study aims were to determine the prevalence of substance abuse, partner violence, comorbidity among women subjected to this violence. In addition, the study sought to describe the relationship between substance abuse and post-traumatic stress syndrome symptom severity. Based on these data, intervention models would be developed.

**Figure 4. Terms and Ideas Representing Key Issue in Grant Application.**

![Diagram showing relationships between terms such as Substance, Abuse, Women, Violence, Traumatic, Stress, Sevemity, Morbid, Partner, and their interconnections.]

Figure 4 shows the ideas associated with the key terms emphasized by the author in describing the research to be performed. The only idea that had not been previously studied was the link between *partner* and *severity*. This idea was not described as central to the rationale for the research.

**Methodologic Issues?** A new study designed to correct the methodologic problems observed in previous reports would be approved if the methods improved on those employed before.

**Sample Size:** The new study proposed to study 200 women identified as having been the victims of partner violence as well as substance abuse. Total sample sizes from prior studies are shown in Figure 5. The median was approximately 800. The smallest sample size was 103 and the largest was 6,004. Eight of the 10 studies exceeded the 200 sample size proposed in the new study. None of the studies – new or existing – reported using random samples from defined populations. Instead, all used purposive samples based on arrest or medical records.
Figure 5. Total Sample Sizes of Prior Partner Violence Studies.

Figure 6 showed the number of women studied in previous studies. The median in the 8 prior studies was approximately 220, comparable to the proposed study. Four of the prior studies were less than the proposed 200 and the other four were 303, 400, 526, and 1025. As such, approval of the new application was not based on improving the study process by increasing the size of the sample.

Figure 6. Sample Sizes of Prior Partner Violence Studies -- Women.

Study Design: Reports from 2000 through 2004 showed a preponderance of purposive studies. One article, predating the current knowledge base, involved an intervention program dealing with safety behaviors. [McFarlane 2002] These authors reported results of a two-group randomized, controlled clinical trial involving 75 abused women who received six telephone intervention sessions. A control group of 75 women received standard care. The authors re-interviewed women in both groups at 3 months and 6
months. They found that significantly more women in the intervention group adopted safety behaviors at both the 3-month and 6-month interviews.

The new study did not improve on the design. Instead, the new study proposed a purposive design.

**Other Factors Related to Partner Violence:** Thirteen articles entered into PubMed during 2003 and 2004 contained the idea – *partner* and *violence*. Those were reviewed and summarized into four categories – Problem Drinking, Risk Factors, Patterns of Injury, and Therapy.

**Partner Violence and Problem Drinking:** White et al [White 2002] examined the role of problem drinking in intimate partner violence (IPV) perpetration and victimization for men and women in a longitudinal design. The authors performed regression analyses to determine if relationship dissatisfaction and partner drinking patterns mediated the effects of problem drinking on IPV after controlling for eight common risk factors. The authors reported that the relationship between problem drinking and IPV was not spurious. They indicated that heavier drinking by partners put women at greater risk for physical assault and, further, mediated the effects of their own problem drinking. Stuart [Stuart 2004] compared hazardous and nonhazardous drinking women on violence and victimization. They explored whether group differences in these variables were attributable to women's drinking, their general propensity for violence, their partners' drinking, or a combination of these factors. They reported that the hazardous drinking group scored higher on physical assault, psychological abuse, sexual abuse, and injuries. They used regression analyses and found that women's drinking, women's general violence, and partner drinking all contributed to some form of violence or victimization.

**Partner Violence and Risk Factors:** Parrott et al [Parrott 2003] examined the effects of substance dependence and posttraumatic stress disorder (PTSD) on perpetration of partner violence. These authors indicated that participants with comorbid cocaine dependence and PTSD reported the highest frequency of partner violence. Field and Caetano [Field 2003] examined ethnic-specific longitudinal predictors of male-to-female and female-to-male partner violence in white, black, and Hispanic couples in the U.S. general population. They indicated that they used the following risk factors: gender, history of childhood abuse, exposure to parental violence, impulsivity, alcohol problems, frequency of drinking five or more drinks per occasion, volume of alcohol consumed per week in average standard drinks, approval of marital aggression and partner violence. They used ethnic-specific multivariate logistic regression models. They reported that Black and Hispanic couples were at approximately two to three times greater risk of partner violence at follow-up in comparison to white couples even after controlling for socio-demographic characteristics, alcohol consumption, and psychosocial variables. Chase et al [Chase 2003] reported that women committed more violent acts overall and were more likely to commit severely violent acts than the men. They indicated that risk factors for partner violence were: less education, lower income, greater relationship problems, stronger beliefs in the link between relationship problems and the female patient's drinking, greater cocaine use by the perpetrator of violence and greater
emotional distress of the men. El-Bassel et al [El-Bassel 2003] used two instruments -- Alcohol Use Disorders Identification Test (AUDIT) and Drug Abuse Severity Test (DAST). They reported higher scores among physically abused women. They indicated that a higher proportion of abused women reported a history of regular crack, cocaine, or heroin use and visiting shooting galleries or crack houses.

**Patterns of Traumatic Injury:** Crandall and colleagues [Crandall 2004] identified women aged 16 to 65 years discharged from acute care hospitals in a single year with a primary diagnosis of injury. The authors collected data from 14 states across the United States. The analysis featured multivariate logistic regression. They reported that women who suffered blunt intentional trauma exhibited very different injury patterns than those hospitalized for motor vehicle collisions or falls.

**Partner Violence and Therapy:** O’Farrell et al [O’Farrell 2004] examined partner violence before and after behavioral couples therapy for 303 married or cohabiting male alcoholic patients and used a demographically matched nonalcoholic comparison sample. They reported that structural equation modeling indicated that greater treatment involvement was related to lower violence after treatment and that this association was mediated by reduced problem drinking and enhanced relationship functioning.

**Partner Violence – 2000-2002:** A search of PubMed using – partner violence – during the period 2000 through 2002 identified an additional 323 articles. Only one of these described a randomized study.[McFarlane 2002] Another described the development of a national guideline for the recognition of abused women. Realizing that this guideline was not being followed, the author urged the initiation of randomized controlled studies.[Goodyear-Smith 2002] The remaining articles were results from purposive sample studies.

**Violence Idea Map:** Figure 7 shows the idea map associated with violence from the substance abuse knowledge base. The terms linked with violence are arranged into categories based on meaning and/or function. The terms used by the author are shown in larger type. Presumably, the proposed study and the resulting knowledge base would identify and confirm the relationships suggested by the literature. In addition, these data would lead to intervention strategies improving on existing ones.

**Gaps, Discrepancies or Inconsistencies:** Important reasons for funding a grant application are recognition of gaps, inconsistencies and/or discrepancies in the existing knowledge. The new study revisits a previously studied relationship between partner violence and post-traumatic stress syndrome in the abused women.[e.g., Najavits 2004 – A, Najavits 2004 – B] Considering the ideas shown in Figure 7, it is clear that the impact of post-traumatic stress required further clarification. While the links between violence and trauma and morbidity were present, the links adding violence and stress as well as trauma, morbidity and stress were not present. The new study seeks to provide those data. These new findings presumably will identify the links leading to new interventions in dealing with this complex problem. Presumably, the reviewers of this grant application
concurred with the author by their decision to approve and recommend funding for this study.

Figure 7. Terms and Ideas Linked with Violence from Substance Abuse Knowledge Base.