

Student Categorical Proposal (Step 1):

Individual Difference Factors as Predictors of Re-victimization

This analysis is designed to examine the potential predictors of re-victimization (being abused both as a child and in adulthood). These analyses will be a re-analysis of data on 163 individuals (75 with reported abuse). Measures of memory ability, psychopathology, and individual differences were collected. While there is a large literature on the relationship between memory ability and the presence or absence of an abuse history, less is known about whether individuals with repeated abuse histories differ from those with one-time interpersonal violence or assault experiences.

In an attempt to address this issue, logistic regressions will be conducted to examine which variables significantly predict re-victimization (0,1). The re-victimization variable will be binomial, and the predictors that will be examined include gender, working memory abilities, autobiographical memory specificity, and depressive or posttraumatic stress disorder symptoms. While re-victimization is the key interest of this examination, I will also conduct a multinomial logistic regression to examine which individual factors predict abuse status (no abuse, child abuse only, recent abuse only, or re-victimization). In this way, I will be able to examine whether the same factors that predict re-victimization can also be extended more broadly as predictors of one's abuse history.

Professor Comments on Proposal:

As we discussed earlier, perhaps the biggest challenge with your project will be that you may not have enough power for several predictors. I think it would be good for you to do a power analysis for a logistic regression based on your knowledge of the literature. I also notice that based on your predictors, you will have to be careful about how you discuss the results. Your models predict abuse using variables such as working memory. Assuming that you are not proposing that abusers select victims based on working memory, the question becomes for what is working memory a proxy? Does working memory tell us about the intelligence of the victim? the education of the victim? something about the environment where the victim grew up? I think there is much room for interpretation, so you will have to take care to support your interpretations. This might be too much to ask of these data, but have you thought about using continuation logits with the category no abuse, abuse, re-victimization?

Retrospective Reflection:

This was a fairly complete proposal --- it identified an appropriate data set, the variables of interest, the question of interest, and an appropriate analysis. The student also sought to implement more than one type of analysis, so as to demonstrate multiple skills from the class. This seemed to indicate that the student was already on track to produce a paper that would meet or exceed expectations (see rubric). The comments sought to encourage the student to demonstrate additional skills (power calculation, continuation logits), and to ensure accurate interpretation of results, both important factors in producing an excellent paper.

Student Paper Draft Excerpts (Step 2):

The experiencing of childhood abuse can be highly traumatic, and much attention paid to the potential impact of abuse on later life outcomes. This work finds that individuals who have been victimized in childhood are likely to experience long-term negative consequences, such as depression, anxiety, low self-esteem, and substance abuse problems (Browne & Finkelhor, 1989; Hoier et al., 1992; Lipovsky & Kilpatrick, 1992).

[...]

Therefore, one goal of these analyses is to determine the factors that are predictive of revictimization, such as gender, PTSD, depression, and working memory abilities. Because of the far-reaching negative consequences of being abused, particularly repeated abuse, this work has implications for interventions and identification of individuals who may be at increased risk for additional abusive experiences.

That being said, one concern that has been raised about this body of work is the operational definition of revictimization, with some studies conceptualizing the construct as abuse experienced both in childhood and adulthood, while others conceptualize revictimization as experience with multiple forms of abuse. Therefore, an additional goal of these analyses is to examine whether there are differences in the relationship between predictors and revictimization depending on how the variable is constructed.

Methods

[...]

Results

Descriptive Statistics

[...]

Power Analysis

Because of the small number of subjects who reported repeated abuse experiences, a power analysis was conducted in SAS. Using the published odds ratio of 4.0 for the likelihood of abuse in adulthood given a childhood abuse experience (Merrill, Newell, Gold, & Milner, 1997) and a minimum acceptable power of .80, the necessary number of subjects in each group is 35. Because the sample size of individuals with repeated abuse experiences does not meet the minimum number of 35, regardless of how revictimization is calculated, these analyses may be limited in the number of variables that can be included in the models, as well as the number of levels that may be constructed for each variable. Because of the small number of individuals with revictimization experiences, the likelihood ratio (LR) test should be a more reliable assessment of model fit than the Wald statistic.

Binomial Logit Models

The first set of analyses examined the factors related to the likelihood of being revictimized, where revictimization is defined as being abused both in childhood and adulthood. The model assessing whether gender was related to revictimization was not significant (χ^2 (df=1) = 2.11, $p = 0.1454$). The likelihood ratio statistic is not significant, at 2.1975 with df=1; a non-significant LR indicates that the intercept-only model and the model with gender fit the data equally well, so we should use the simpler model.

[...]

The second set of analyses examined whether the previously described patterns were altered when revictimization was conceptualized as exposure to multiple forms of abuse. When exposure to multiple forms of abuse is used as the dependent variable, gender is a significant predictor of revictimization (χ^2 (df=1) = 4.23, $p = 0.0396$; LR = 4.5343). The β estimate is 1.0044, with $e^{1.0044}$ indicating that females are 2.73 times more likely to experience multiple forms of abuse than males. Similar to the first set of analyses, PTSD is still a significant predictor of multiple abuse experiences (χ^2 (df=1) = 12.64, $p = 0.0004$; LR = 15.3126). The β estimate is 1.9169, with $e^{1.9169}$ indicating that individuals with PTSD are 6.80 times more likely to be exposed to multiple forms of abuse than individuals without PTSD. When both gender and PTSD are included as predictors of multiple abuse exposure the overall model is significant (LR = 19.2244); however, the interaction (χ^2 (df=1) = 1.3199, $p = 0.2506$) and the main effect of gender (χ^2 (df=1) = 2.6807, $p = 0.1016$) are not significant predictors and PTSD remains significant (χ^2 (df=1) = 6.4011, $p = 0.0114$) with the β estimate remaining at 1.9169.

[...]

Multinomial Logistic Analyses

The final set of analyses examined the predictors associated with the nature of one's abuse experiences, with the levels being no abuse, abuse that occurred in either childhood or adulthood, or abuse in both childhood and adulthood. By constructing this three-level multinomial outcome variable, we are able to discern potential differences in the variables that predict the likelihood of being revictimized as compared to being abused during one time point or not being abused at all.

[...]

The parameter estimate comparing the group with an abuse experience in either childhood or adulthood to individuals who were abused in both childhood and adulthood is 0.6609 ($p=0.0338$). Taking the exponent of 0.6609 ($e^{0.6609}$) indicates that the odds of an individual with PTSD being abused in both childhood and adulthood compared to being abused during either childhood or adulthood are 1.94 times those of an individual who does not have PTSD being abused in both childhood and adulthood compared to being abused during one time period, either childhood and adulthood.

Discussion

[...]

Professor Comments on Proposal:

This paper explores the relationship between abuse re-victimization and factors such as gender, PTSD, depression, and working memory. Overall this was a great paper, and I only have a few considerations for the author (described in the following paragraph). I have highlighted a variety of more minor points in the list that follows.

From our earlier conversations, I thought that you were going to try predicting types of abuse (e.g., physical versus sexual). Aside from small sample size, why didn't you? My suggestion is to run those analyses with the intention of getting some parameter estimates that can be used for a future study. If you did want to predict physical vs. sexual based on a few variables (e.g., depression, controlling for gender and PTSD), how many people would you need to get a significant effect. (Stick to a binary outcome, as the power tables are better established for that case).

The remainder of my points are relatively minor, so I have listed them below so as to not belabor these points:

-I am curious how much overlap is there in the differing methods of calculating revictimization. Is there really enough difference to consider these different variables? That is, are most of the people the same (say 16 out of 19/22), or do you really end up with very different people in this sample depending on definition?

[...]

-Also on depression: Can you put the results into more understandable units? What does a 1-unit increase really mean? Perhaps another unit would be more informative? There may be other cases like this you can change in your paper.

-On a practical level, how good are your predictors at guessing who is each category? Could you correctly classify most people or not?

[...]

Retrospective Reflection:

Overall this paper was relatively complete. Often with an expected level paper, one or two important issues can be highlighted in the analysis. The major comment on this paper (second paragraph, professor's comments) was more aimed at pushing this paper beyond its initial scope, rather than aimed at addressing an issue in the analysis. This paper was above expectations already, and on its way to being an excellent paper.

Student Final Paper Excerpts --- Key Changes (Step 3):

[...]

Methods

[...]

Good validity has been observed on this scale when used with Caucasian, Hispanic, and African American adolescents and adults (Roberts, 1992; Roberts, Vernon, & Rhoades, 1989). Cronbach's alphas in this sample ranged from .84 to .87; they have been found to range from .84 to .90 in field studies, and re-test reliability has been found to range from .51 to .67 in two through eight week intervals (Radloff, 1977; Comstock & Helsing, 1976; Weissman, Shlomoskas, Pottenger, Prusoff, & Locke, 1977).

[...]

Results

[...]

Potential Issue of Multicollinearity Between PTSD and Depression

The measures of PTSD, depression, and working memory were examined for collinearity using the 'vif tol collin' options in the PROC REG procedure, which is a stronger test of collinearity than examining correlations between the variables of interest. The test of multicollinearity resulted in the diagnostic statistics (Table 3).

Table 3. Tests of Multicollinearity between Working Memory, Depression, and PTSD

	<u>Tolerance</u>	<u>Variance Inflation Factor</u>	<u>Condition Index</u>
Working Memory	0.98926	1.01086	9.68667
Depression	0.96033	1.04131	2.53095
PTSD	0.95811	1.04373	2.47223

The measure of tolerance indicates the proportion of variance of a predictor not explained by the other predictors, while the variance inflation factor (VIF) is 1/tolerance. The VIF indicates how much each estimated coefficient is multiplied by because of multicollinearity. As each of the VIF factors is nearly 1.00, this indicates that there is hardly any inflation in our coefficients due to multicollinearity.

An additional test of multicollinearity is to examine the condition index; a general rule of thumb is that the largest condition index should be less than 30 to ensure lack of collinearity. As our largest condition index is that of working memory at 9.68667, we can infer that our data does not suffer from issues of multicollinearity.

Inferential Statistics

The following sections will describe the conducted analyses aimed at elucidating the predictors of abuse revictimization. The first set of binary logit analyses examined whether gender, depression, PTSD, and working memory abilities predicted whether individuals experienced any form of abuse (physical or sexual) during both childhood and adulthood. The second set of binary logit analyses examined whether the same predictors – gender, PTSD, depression, and working memory – predicted whether individuals had experienced multiple forms of abuse or not. All binary logistic analyses were conducted using PROC LOGISTIC.

[...]

The third set of analyses examined whether additional information was gained from a multinomial approach to abuse status. Thus, the first set of multinomial logistic models examined whether gender, depression, PTSD, and working memory predicted whether an individual had no abuse history, was abused during one time period (in childhood or adulthood), or was abused in both childhood and adulthood. The follow-up multinomial models examine whether the same predictors hold when physical abuse revictimization status and sexual abuse revictimization status are considered separately.

[...]

Discussion

[...]

Retrospective Reflection:

In the revised paper, there were multiple additions which sought to complete the content of the paper. The additions include information about validity (Methods section), a discussion of possible multicollinearity

(Results section), clarification about the analyses (first paragraph under Inferential Statistics), and additional analyses appropriate to the questions put forth by the paper (e.g., final paragraph shown in Results section). The extensive improvements in response to reviewer comments on an already good paper made this an excellent paper.