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Do Severe Depression and Loss of Self-Esteem Follow Abortion? Evidence from a National Study of Adolescents

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Abstract

Context—A 2008 report by the American Psychological Association (APA) found no evidence that an induced abortion causes mental health problems in adult women. No conclusions were drawn with respect to adolescents because there were too few studies on which to base a conclusion.

Methods—We examined whether abortion in adolescence was associated with mental health problems, specifically depression and low self-esteem. We used data from the National Longitudinal Study of Adolescent Health. Two hundred eighty-eight female respondents reported at least one pregnancy between Wave I (1994–1995) and Wave II (1996). Of these, 69 reported an induced abortion. Population averaged logistic regression models were used to examine whether abortion was associated with depression and low self-esteem within a year of the pregnancy and approximately five years later at Wave III (2001–2002).

Results—Abortion was not associated with depression or low self-esteem at either time point. Sociodemographic factors did not substantially modify the relationships between abortion and the outcomes.

Conclusions—Adolescents who have an abortion do not appear to be at higher risk for depression or low self-esteem in the short-term or up to five years after the abortion.

Abortion is a common medical procedure among women of reproductive age, with approximately 1.2 million abortions performed in the U.S. in 2005,¹ and serious complications from abortion are rare.² However, purported psychological risks of terminating a pregnancy have increasingly been used as a justification for restricting women's access to abortion.^{3,4} For example, when the South Dakota legislature banned abortion except to protect the woman's life in 2005 (the ban was later overturned by voters), it based the decision on a state task-force report which said that women cannot terminate pregnancies without "risk of suffering significant psychological trauma and distress" because "[t]o do so is beyond the normal, natural, and healthy capability of a woman whose natural instincts are to protect and nurture her child".⁴ More recently, in the Supreme Court's decision upholding the Partial Birth Abortion Ban, Justice Anthony Kennedy wrote:

“While we find no reliable data to measure the phenomenon, it seems unexceptionable to conclude some women come to regret their choice to abort ... Severe depression and loss of esteem can follow.”⁵

Studies on the psychological consequences of abortion have had conflicting results and varying degrees of scientific rigor. Some studies have found that women with a history of abortion compared with other women have higher rates of some types of depression disorders,^{6–8} anxiety,⁹ bipolar disorder,^{7,8} schizophrenia,⁸ and overall number of mental health problems.^{7,8,10} Other studies have found no association between abortion and adverse outcomes, including depression, anxiety, and low self-esteem.^{11–16} In 2006, the American Psychological Association (APA) convened an expert panel to review empirical studies published since 1989. The panel concluded that there was no credible evidence that terminating an unwanted pregnancy causes mental health problems in adult women.¹⁷ The panel noted that some studies suffered from serious methodological flaws or failed to control for well-known confounding factors and recommended further research to address these shortcomings.¹⁷ No conclusions could be drawn with respect to abortion’s effects on the mental health of adolescents because there were too few studies on which to base judgment.

Adolescents, however, are a particularly appropriate population to consider with respect to possible effects of abortion because 1) they are assumed to be more vulnerable to psychological harm from abortion¹⁸ and, 2) the vast majority of pregnancies to adolescents are unintended,¹⁹ thus minimizing differences in psychological outcomes due to the degree to which a pregnancy was initially wanted. Most studies of abortion in adolescence have compared psychological outcomes in adolescents with those in adult women.^{12,18,20} Whether adolescents differ from adult women does not directly address the question, however, of whether abortion has adverse psychological effects for adolescents. Few studies have compared adolescents who had an abortion with peers who did not. In an earlier study, Zabin, Hirsch, and Emerson¹⁶ assessed psychological functioning and educational and economic outcomes among 360 black adolescents who sought pregnancy tests at Baltimore family planning clinics. The adolescents who had an abortion did not differ significantly from their peers on measures of psychological functioning at baseline and were doing as well or better at the second year follow-up than girls who had not been pregnant and those that had given birth. Negative consequences observed in the study, psychological and economic, appeared to be a consequence of early motherhood among this low-income, minority sample. Another study attempted to address the limitation of generalizability of earlier studies by using nationally representative survey data to compare adolescents who terminated an unintended pregnancy with those who carried an unintended pregnancy to term.²¹ The study identified an association between abortion and receipt of psychological counseling and sleep problems; however, because all items were measured within the previous year, it is not possible to determine whether abortion preceded or followed the outcomes or whether a third, unobserved covariate was responsible for the association.

The purpose of this study was to examine whether abortion in adolescence was followed by depression and low self-esteem among a nationally representative sample of adolescent women. We used data from the National Longitudinal Study of Adolescent Health (Add Health).²² Many studies on the effects of abortion, among adult women and adolescents,

have been conducted with samples drawn from a particular subgroup or from clinics in one city.^{11,12} Although well-designed and comprehensive, the generalizability of the findings from these studies is limited. With the exception of the study noted above,²¹ previous studies using representative data have not focused specifically on adolescents. Furthermore, Add Health includes validated and commonly used measures of depression and self-esteem (the Center for Epidemiological Studies-Depression [CES-D] scale²³ and the Rosenberg Self-Esteem [RSE] scale,²⁴ respectively). Finally, the Add Health data are longitudinal and allowed for control of prior mental health in analysis, that is, depression and self-esteem before the target pregnancy. In the APA report,¹⁷ the authors noted that failure to control for prior mental health was a fault shared by most studies that rely on secondary data. In addition, prior research has suggested that there may be long-term effects of abortion on women's mental health.²⁵ The longitudinal nature of the Add Health data allowed us to assess psychological outcomes within one year of the abortion, at Wave II, and about five years later, at Wave III.

METHODS

Data are from the Add Health study, an ongoing, nationally representative study of U.S. adolescents in grades 7 through 12 in 1994–1995.²⁶ Systematic sampling methods were used to comprise a sample representative of U.S. schools with respect to region of country, urbanicity, school size, school type, and ethnicity. Data for this study were drawn from the first three in-home surveys. All data were recorded on laptop computers. For sensitive topics, such as sexual behavior and pregnancy, data were collected via Audio Computer-Assisted Self Interview (ACASI), in which adolescents listened to questions through earphones and entered their own responses into a computer. Wave I data were collected in 1995 and Wave II data approximately one year later, when the respondents were between the ages of 13–18. Wave III data were collected about five years after the second interview, between 2001 and 2002. Wave III respondents are representative of the same population as the original Wave I sample when sampling weights are utilized. Data security plans were approved by the University of North Carolina at Chapel Hill and Oregon State University and all study procedures were approved by the Oregon State University Institutional Review Board.

Sample

In Wave II, female respondents who reported ever having sexual intercourse were asked a series of questions about pregnancy. Specifically, they were asked, "Have you ever been pregnant? Be sure to include if you are currently pregnant and any past pregnancy that ended in an abortion, stillbirth, miscarriage, or a live birth after which the baby died." Respondents who answered in the affirmative were then asked how many times they had been pregnant. Pregnancies that were completed after the respondent's Wave I interview date were retained. There were 60 pregnancies that had indeterminate resolution dates. Nine had the month the pregnancy was resolved but were missing the year, 17 were missing date information due to respondent refusal and 34 were missing because the respondent said she did not know the month and year of resolution. Four pregnancies that ended in 1996 but were missing the month were retained because all Wave I interviews were completed by December 1995.

There were no missing months for pregnancies reported in 1995. The retained pregnancies numbered 297 between Waves I and II from 292 respondents (4.19% of total female respondents). Of the pregnancy outcomes reported, there were 70 abortions, 159 live births, 67 miscarriages, and 1 stillbirth. One respondent reported 2 abortions and two respondents reported both live birth and miscarriage. The analytic study sample was comprised of female respondents with at least one completed pregnancy between Waves I and II and full information on the study variables (289, 98.63% for Wave II outcomes, 228, 78.08 % for Wave III outcomes). The attrition rate for the study sample is comparable to the overall Add Health respondent attrition rate from Wave I to Wave III (77.4%).

Measures

A modified version of the Center for Epidemiologic Studies-Depression scale (CES-D)²³ was used to assess depressive symptoms. The CES-D is a well-validated epidemiological screening tool widely used in adult and adolescent populations.^{27–30} Items gauged the frequency of symptoms in the previous seven days, such as having trouble keeping focused, feeling depressed, and being too tired to do things. Response options ranged on a four-point scale from “never or rarely” to “most or the time or all of the time.” Two items in the Add Health surveys were rephrased from the original 20-item CES-D scale (items on frequency of crying and restless sleep) and referred to the previous 12 months. Because of the different time period, these two items were not included in the scales created for this study. Items that were positively worded were reverse coded so that a higher score indicated more depressive symptoms.

Waves I and II of the Add Health survey included 18 items and were summed for a total CES-D score. For the Wave II items, the internal consistency reliability (Cronbach's α) was 0.88 and the scores ranged from 0–47. The Wave I measure (*prior depression*) was included as a covariate in analyses. For Wave I items, α = 0.88 and scores ranged from 0–54. Roberts and colleagues³¹ determined that a cut point of 24 provides an optimal balance between the sensitivity and specificity of the CES-D for predicting major depressive disorder among female adolescents as defined by the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised*. We therefore created a cut point of 22, proportionally adjusted for the reduced number of items, to indicate high depressive symptom levels among female respondents at Waves I and II. The Wave III Add Health interview contained only 9 of the CES-D items; these were summed for a total CES-D score. For the Wave III items, α = 0.83 and scores ranged from 0–25. A score to indicate high depressive symptoms at Wave III was calculated following Gotlib and colleagues³² who determined that a cut point of one standard deviation above the sample mean maximizes the sensitivity and specificity of the CES-D for identifying respondents with major depressive disorder. The CES-D scale has been shortened to as few as 4 items and found to retain predictive power similar to the full scale.³³ The abbreviated CES-D scale used in Wave III has been used in other studies of depression, including studies of alcohol use,³⁴ social inequality,³⁵ and smoking.³⁶ The unweighted sample mean for the Wave III CES-D scale was 6.16 (weighted 6.33), with a standard deviation of 4.64. The cut-off score was rounded to 11.

Self-esteem was measured by an abridged 6-item Rosenberg Self-Esteem (RSE) scale.²⁴ Respondents were asked how much they agreed or disagreed on a 5-point scale (strongly agree to strongly disagree) with the following statements: “You have many good qualities;” “You have a lot to be proud of;” “You like yourself just the way you are;” “You feel you are doing things just about right;” “You feel socially accepted;” and “You feel loved and wanted.” The last two items were not included in the Wave III interview. Higher scores indicated lower self-esteem. Scale scores were created by averaging the items (range= 0–5) and internal consistency reliability (Cronbach’s α) was .85 for the Wave I items, .86 for the Wave II items and .91 for the 4 items in Wave III. Following Goodman and Whitaker,³⁷ low self-esteem was defined as belonging in the highest quartile on this scale compared with a referent group of those in the other quartiles.

Control variables were measured at Wave I and included because of their possible relationships to adolescent pregnancy or psychological distress. *Age* was calculated by subtracting the Wave I interview date from the respondent’s date of birth and, for analysis, was rounded to two decimal points. *Race/ethnicity* was measured using questions that assessed Hispanic/Latino origin and racial background. From this information, the following exclusive categories were created: Hispanic (all races); non-Hispanic Black; non-Hispanic White; and non-Hispanic other (primarily Asian/Pacific Islander). *Household structure* was determined from household roster information. Respondents were asked to list all household members and the relationship of each to the respondent. From this information, a variable was created to indicate whether the respondent lived with two parents (any combination of biological or step), with one parent (either biological or step), or in some other arrangement (group home, grandparents, etc.). A proxy measure of *family economics* was created from the adolescent’s report of whether a resident parent had ever received federal assistance, such as welfare. Other measures of family economics, such as family income and parental education level, had high proportions of missing data and could not be used in the present analyses.

Previous analyses of the Add Health data found that sociodemographic characteristics did not predict persistent depression among Add Health respondents.³⁸ The family sociodemographic variables were included in the present study, however, because economic hardship may be a common predictor of abortion and risk of depression or lower self-esteem.³⁹

Analytic Strategy

Population means and proportions were calculated to describe the study sample. Differences between the groups were tested using Pearson’s chi-squared and *t* statistics adjusted for the complex sample design. Separate models were created for the outcomes at Wave II and Wave III. We used logistic regression to model the effect of abortion on depression and low self-esteem, using procedures for population-average models.^{40,41} We began with the unadjusted association between abortion and the outcome and then included the lagged measures of the outcome (Wave I measures of *depression* and *low self-esteem*) and the control measures. Lagged measures were included as controls for psychological functioning prior to the pregnancy and the control variables were included to test whether they modify

the relationship between abortion and the outcomes. Adjusted odds ratios and Wald statistics are reported for all models. Because Add Health used a complex sampling design, all analyses were adjusted for potential design effects with survey procedures and appropriate subpopulation commands in Stata version 10 (College Station, Texas). Weights were assigned according to Add Health specifications to yield nationally representative population estimates.⁴²

RESULTS

The adjusted means and proportions for the variables by abortion status at Wave II are presented in Table 1. Fewer respondents in the abortion group lived in households without a parent and in households in which at least one parent had received federal assistance. The proportions of respondents with depression and low self-esteem at each time point tended to be lower in the abortion group with the exception of low self-esteem at Wave II.

Depression

Results from the logistic regression models for depression are included in Table 2. Abortion was not associated with depression at Wave II or Wave III, nor was the relationship modified by the inclusion of the control variables. Although the confidence intervals for abortion were fairly wide, the direction of the effect tended toward a negative relationship and the p-values were not marginal. As expected, the strongest predictor of depression was prior depression. Among this sample, sociodemographic variables did not predict depression at Wave II. In the Wave III depression model, controlling for all other variables, federal assistance and other race/ethnicity were negatively associated with depression. There were no significant interactions between the variables in predicting either depression outcome.

Low Self-esteem

Results from the lagged logistic regression models for low self-esteem are included in Table 3. As with the depression models, the inclusion of the control variables did not substantially modify the relationship between abortion and low self-esteem at Wave II or Wave III. The direction of the effect of abortion is positive at Wave II and negative at Wave III, however, the effects do not approach significance. Only age approached significance in the Wave II model.

Because estimations using weighted data and adjusting for the complex survey design may be conservative, we conducted the same analyses with unweighted data. Results from the unweighted logistic regression analyses did not differ from those reported here, that is, there were no differences in either the direction or the significance of the effect of having an abortion on either depression or low self-esteem.

DISCUSSION

Although prior studies have examined a range of mental health outcomes and their relationship with abortion, this study is the first to use both depression and low self-esteem as outcomes with nationally representative, longitudinal data. The young women in this study who had an abortion were no more likely to become depressed or have low self-esteem

within the year of the pregnancy or five years later than their peers whose pregnancies did not end in abortion. Consistent with previous studies of abortion and psychological outcomes, the strongest predictors of depression and low self-esteem were the measures of prior depression and prior low self-esteem.^{11, 13} Findings were also consistent with previous research in which race/ethnicity and sociodemographic factors failed to explain persistent depression in U.S. adolescents.³⁸

A previous study using the Add Health data found adolescents who had an abortion were more likely than their peers who carried an unintended pregnancy to term to have sleep problems and receive emotional or psychological counseling.²¹ The author cited the findings as evidence of a causal relationship between abortion and adverse outcomes. However, the items on which the outcomes (sleep problems and receipt of psychological counseling) were based referred to the previous 12 months, as did the pregnancy questions. Thus, the direction of the relationship between the variables could not be established because of the inability to determine whether sleep problems and counseling came before or after pregnancy. In this study, the depression items referred to the previous two weeks and the self-esteem items to perceptions at the time of the interview; thus, the temporal relationships between abortion and the outcome measures are clearer and no associations were found.

An important limitation in abortion research using self-reported data is the likelihood of underreporting of abortion. Analyses of abortion reporting in the National Survey of Family Growth (NSFG) indicated that, in the 1995 survey, approximately 60% of abortions were reported by women under the age of 20.⁴³ To assess reporting levels in Add Health, abortion estimates were generated and compared with national estimates. To calculate national abortion estimates, Henshaw and Feivelson⁴⁴ used data from the Guttmacher Institute's national survey of abortion providers and from information compiled by state health statistics agencies and the Centers for Disease Control and Prevention. Based on expert recommendation (S. Henshaw, personal communication, October 12, 2005), the abortion ratio reported in Add Health was compared with the national abortion ratio to determine the extent of underreporting. The abortion ratio is defined as the proportion of abortions per 100 pregnancies ending in abortion or live birth within a 12-month period. The national abortion ratio in 1995 for women aged 15–19 was 34.6.⁴⁴ The ratio in this study was 30.3. By these estimates, approximately 87% of abortions were reported by Add Health respondents. Although this appears to be an improvement over other national surveys, our estimates could be biased if adolescents who failed to report an abortion were more likely than their peers to be depressed or have low self-esteem at the follow-up interviews.

Other limitations must also be considered in interpreting the findings. Failing to find an effect for abortion could be due to other factors, including insufficient sample size to detect an effect. Although Add Health is a large study with thousands of respondents, adolescent abortion is a relatively uncommon event, thus, the number of cases available for analysis is far less than the total population interviewed. It is also possible that some unobserved common factors (such as a family history of mental illness) drive both the decision to abort (or not abort) and adverse changes in mental health. The failure to include such factors also could have biased the estimates. In addition, Add Health is a school-based sample and thus excludes adolescents who were not enrolled in school at baseline. Since school enrollment is

compulsory until age 16, older adolescents who dropped out of school may be underrepresented in this study. The CES-D was developed to be used in large population studies and is predictive of, but not diagnostic of, major depression. Furthermore, Wave III included only nine items of the original scale and the predictive power of the abbreviated scale is unknown. Finally, we did not consider pregnancy intention in this study. Pregnancy intention may be an important factor in comparisons of adult women's mental health after pregnancy⁴⁵ and the Add Health surveys do include questions related to pregnancy intention. We did not attempt to restrict our sample, however, because previous research indicated that an overwhelming majority of adolescent pregnancies in 1994 were unintended.⁴⁶

Depression is a complex condition, influenced by many factors. Research has consistently identified several risk factors for depression in women, including family history, childhood adversity, social isolation, physical illness and exposure to traumatic life events.⁴⁰ Opponents have suggested that abortion is a traumatic event with severe consequences for women's mental health. However, the results of this study and the best evidence available indicate that abortion does not cause either depression or low self-esteem. Yet despite the professional consensus, women in some U.S. states are advised during pre-abortion counseling that they are jeopardizing their mental health by having an abortion.⁴⁷ Paradoxically, laws that mandate women considering abortion be advised of its psychological risks may jeopardize women's health by adding unnecessary anxiety and undermining women's right to informed consent. The findings from our study add to the body of evidence that these counseling requirements are not scientifically founded.

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Table 1

Characteristics of female adolescents with pregnancy between Waves I and II of the National Longitudinal Study of Adolescent Health, by abortion status

| Characteristic | Abortion Between Waves I & II | No Abortion Between Waves I & II | <i>p</i> |
|--------------------------|-------------------------------|----------------------------------|----------------|
| | Proportion (SE) | Proportion (SE) | |
| Mean age (in years) | 16.73 (.13) | 16.81 (.13) | . ^a |
| Race/ethnicity | | | |
| White Non-Hispanic | 63.54 (.07) | 60.07 (.07) | .61 |
| Black Non-Hispanic | 19.46 (.06) | 25.62 (.05) | .42 |
| Hispanic (all races) | 10.64 (.04) | 13.65 (.05) | .66 |
| Other race/ethnicity | 6.27 (.03) | 1.52 (.05) | .11 |
| Household structure | | | |
| Two-parent | 52.25 (.08) | 38.56 (.05) | .14 |
| Single-parent | 43.38 (.08) | 42.10 (.05) | .89 |
| Other | 4.37 (.03) | 19.32 (.04) | .00 |
| Federal assistance | 10.01 (.04) | 20.00 (.03) | .05 |
| Depression Wave I | 16.14 (.05) | 24.26 (.04) | .22 |
| Depression Wave II | 14.14 (.05) | 18.24 (.03) | .52 |
| Depression Wave III | 16.92 (.07) | 20.54 (.04) | .65 |
| Low self-esteem Wave I | 18.43 (.07) | 26.36 (.03) | .25 |
| Low self-esteem Wave II | 28.11 (.06) | 27.09 (.04) | .89 |
| Low self-esteem Wave III | 32.79 (.10) | 35.90 (.05) | .77 |

Note: Data weighted; age, race/ethnicity, household structure, and federal assistance measured at Wave I; differences between groups based on adjusted, design-based Pearson χ^2 for categorical variables and *t*-statistic for age.

Table 2 Logistic regression analyses: unadjusted and adjusted effects of abortion on depression at Wave II and Wave III among female adolescents with pregnancy between Wave I and Wave II of the National Longitudinal Study of Adolescent Health

| Variable | Depression Wave II | | | Depression Wave III | | |
|----------------------|-----------------------|-----|----------------------|---------------------|----------------------|-------------------|
| | Model 1 | | Model 2 | Model 1 | | Model 2 |
| | OR (95% CI) | p | OR (95% CI) | OR (95% CI) | p | p |
| Abortion | 0.74, (0.30, 1.84) | .51 | 0.75 (0.27, 2.09) | 0.79 (0.27, 2.31) | .66 | 0.69 (0.24, 2.01) |
| Prior depression | | | 3.68 (1.61, 8.43) | | | 2.01 (0.93, 4.33) |
| Age (in years) | | | 0.89 (0.64, 1.23) | | | 0.74 (0.52, 1.05) |
| Race/ethnicity | | | | | | |
| White Non-Hispanic | | | Referent | | | Referent |
| Black Non-Hispanic | | | 1.12 (0.35, 3.57) | | | 0.77 (0.28, 2.13) |
| Hispanic (all races) | | | 1.08 (0.38, 3.10) | | | 0.98 (0.37, 2.58) |
| Other race/ethnicity | | | 3.81 (0.61, 23.63) | | | 0.06 (.01, 0.62) |
| Household | | | | | | |
| Two-parent | | | Referent | | | Referent |
| Single-parent | | | 1.04 (0.39, 2.77) | | | 0.71 (0.25, 2.03) |
| Other | | | 0.92 (0.25, 3.41) | | | 0.51 (0.12, 2.26) |
| Federal assistance | | | 1.24 (0.51, 3.00) | | | 0.28 (.008, 0.95) |
| Adjusted Wald | F(1,128)= 0.43, p=.51 | | F(9,119)=1.66, p=.11 | | F(1,127)=0.19, p=.66 | |

Note: Prior depression and all other variables other than abortion measured at Wave I; abortion measured at Wave II; OR = odds ratio; CI= confidence interval; data weighted and analyses corrected for complex sample design.

Table 3
 Logistic regression analyses: unadjusted and adjusted effects of abortion on low self-esteem at Wave II and Wave III among female adolescents with pregnancy between Wave I and Wave II of the National Longitudinal Study of Adolescent Health

| Variable | Low Self-esteem Wave II | | | Low Self-esteem Wave III | | |
|-----------------------|-------------------------|-----|-------------------------|--------------------------|------------------------|--------------------------|
| | Model 1 | | Model 2 | Model 1 | | Model |
| | OR (95% CI) | p | OR (95% CI) | OR (95% CI) | p | p |
| Abortion | 1.05 (0.52, 2.14) | .89 | 1.33 (0.65, 2.71) | 0.87 (0.33, 2.27) | .78 | 0.89 (0.33, 2.41) .81 |
| Prior low self-esteem | | | 7.60 (3.15, 18.33) | | | 1.53 (0.69, 3.37) .29 |
| Age (in years) | | | 0.80 (0.62, 1.03) | | | 0.99 (0.73, 1.35) .96 |
| Race/ethnicity | | | | | | |
| White Non-Hispanic | | | Referent | | | Referent |
| Black Non-Hispanic | | | 0.86 (0.37, 2.00) | | | 0.50 (0.20, 1.27) .14 |
| Hispanic (all races) | | | 0.98 (0.38, 2.55) | | | 0.98 (0.42, 2.31) .97 |
| Other race/ethnicity | | | 1.05 (0.31, 3.61) | | | 0.29 (0.04, 2.17) .23 |
| Household structure | | | | | | |
| Two-parent | | | Referent | | | Referent |
| Single-parent | | | 0.89 (0.37, 2.11) | | | 1.10 (0.46, 2.66) .83 |
| Other | | | 1.05 (0.24, 2.90) | | | 0.68 (0.22, 2.13) .51 |
| Federal assistance | | | 0.83 (0.21, 2.50) | | | 1.28 (0.46, 3.55) .63 |
| Adjusted Wald | $R(1,127)=0.02, p=.89$ | | $R(9, 119)=3.56, p=.00$ | | $R(1,128)=0.08, p=.78$ | |

Note: Prior self-esteem and all other variables except abortion measured at Wave I; abortion measured at Wave II; OR = odds ratio; CI= confidence interval; data weighted and analyses corrected for complex sample design.