



Abortion Mental Health Research: Update and Quality of Evidence

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Recent years have brought a dramatic increase in the number of scientific studies published worldwide documenting the psychological damage frequently ushered in by abortion. Negative effects of abortion on various aspects of women's mental health and quality of life are now well-established. The newer research has overcome many methodological shortcomings plaguing earlier work, leading to much clearer answers to several basic questions including the following: 1) Does abortion introduce risks to women's mental health? 2) Does abortion adversely impact other aspects of women's lives

(e.g. intimate relationships, parenting, etc.) even if they do not suffer from a diagnosable ailment? 3) Are the risks associated with abortion greater than those associated with childbirth?

A wide range of adverse psychological and behavioral effects have been reported in the aftermath of abortion. Common negative outcomes documented in the research literature include the following:

- **Guilt**, resulting from violation of one's sense of what is right or moral. For women who believe they have consented to killing a human being, the burden of guilt can be unbearable.
- **Anxiety** experienced in various ways: tension (inability to relax, irritability, etc.), physical responses (dizziness, pounding heart, upset stomach, headaches), difficulty concentrating, disturbed sleep, etc.
- **Psychological numbing** is reported among some people who experience painful losses. Women who abort may avoid a wide range of emotions to escape the pain of abortion. Close interpersonal relationships may become impaired as a result.

- **Depression and thoughts of suicide** are often experienced by women after an abortion. Many women develop symptoms of depression including sad moods, sudden and uncontrollable crying episodes, low self-esteem; sleep, appetite, and sexual disturbances; reduced motivation; and disruption in interpersonal relationships. One woman who completed a survey for our ongoing online data collection effort (www.abortionresearch.net) described the pain well: "If I had it to do over again, then I would never take the route of abortion. I struggle every day with depression and regret. My heart hurts so bad that it feels like I'm having a heart attack. My husband and family are drained and tired of hearing of my heartache."

- **Alcohol and drug abuse** in post-abortive women often begin as a form of self-medication, a way of coping with the psychological pain of abortion memories.

- **Unwanted re-experiencing of the abortion** in the form of distressing, recurring 'flashbacks' or reoccurring nightmares about babies are reported by some women.

- **Avoidance** of stimuli associated with abortion, pregnancy, mothers,

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children and particularly infants is not uncommon.

- **Compromised parenting** occurs following some abortions. A woman might not allow herself to properly bond with future children because of a fear of loss. Over-protectiveness has been reported as well.

Women with particular psychological and demographic characteristics are more vulnerable to post-abortion mental health problems. Risk factors for problematic psychological functioning after abortion are well-substantiated and an abbreviated list is provided below.

- Low confidence related to coping with the abortion
 - Compromised self-esteem
 - External focus of control – or feelings that events are directed by factors outside the individual (God, others, chance, etc.)
 - Non-supportive partner, family members, or friends
 - Conservative views of abortion
 - Psychological effects of abortion
 - If the pregnancy is initially intended
 - With unstable or immature partner relationships
 - When women are unmarried or poor
 - Feelings of being forced into abortion by significant individuals or by life circumstances
 - Pre-abortion ambivalence or decision difficulty
 - Second trimester abortions
 - Pronounced maternal orientation
 - Pre-existing emotional problems or unresolved trauma
 - Prior abortions or having had children previously
 - A history of a negative relationship with one's mother
 - Timing during adolescence
- Among the most commonly

reported negative effects of abortion in the literature are anxiety, depression, and substance use. Based on an extensive review of the literature, Bradshaw and Slade (2003) recently concluded that up to 30% of women experience clinical levels of anxiety and/or high levels of general stress one month post-abortion.

Increased risk for substance use has also been found to be strongly associated with abortion. Using data from a nationally representative sample, Coleman and colleagues (2002) reported in the *American Journal of Obstetrics and Gynecology* that pregnant women with a prior history of abortion, compared to women without a history, were 10 times more likely to use marijuana, 5 times more likely to use various illicit drugs, and were twice as likely to use alcohol. In a paper published in the *American Journal of Drug and Alcohol Abuse*, in which Reardon and colleagues (2004) compared women who aborted to women who carried an unintended pregnancy to term, those who aborted were twice as likely to use marijuana and reported more frequent use of alcohol.

In 2006 New Zealand pro-choice researcher David Fergusson published results revealing that young women who aborted were at a higher risk for various psychological problems compared to women who carried to term and those who were never pregnant. By age twenty-five 42% reported major depression, 39% suffered from anxiety disorders, 27% reported experiencing suicidal ideation, and 6.8% indicated alcohol dependence.

Dr. Fergusson and his colleagues challenged the American Psychological Association's conclusion that: "*Well-designed studies of psychological responses following abortion have consistently shown that risk of psychological harm is low.*" He noted this conclusion was based on a small number of studies, which suffer from significant methodological problems as well as a general disregard for studies showing negative effects.

According to the research, a minimum of 20-30% of women experience adverse, prolonged post-abortion psychological reactions. The results of the four largest, record-based studies in the world have shown abortion is associated with increased risk for mental health problems.

In 2001 Ostbye and colleagues published data on 41,089 women with an abortion history compared to a matched group of 39,220 women without a history of abortion, relative to hospitalization for psychiatric problems. The results revealed a 165% higher rate of hospitalization for the abortion group. In the second study, David et al. (1981) found the overall rate of psychiatric admission was 18.4 and 12.0 per 10,000 for women who had aborted and delivered respectively. For those who were divorced, separated, or widowed, the psychiatric admission rate was 63.8 per 10,000 for women who aborted versus 16.9 for those who delivered.

The remaining two studies were conducted by Coleman, Reardon, Rue, and Cogle (2002) and by Reardon, Cogle, Rue, Shuping, Coleman, and Ney, (2003) in the

U.S. using data from over 54,000 low-income women on state medical assistance in California. Women who had an abortion had significantly higher rates of outpatient psychiatric diagnoses than women with only birth experience and no history of subsequent abortions after eliminating all cases with psychiatric claims 12-18 months prior to the initial pregnancy. This difference was apparent when data for the full time period were examined (17% higher) and when only data from women with claims filed on their behalf within 90 days (63% higher), 180 days (42% higher), 1 year (30% higher), and 2 years (16% higher) of the pregnancy event were considered. Data using the same sample and focusing on inpatient claims revealed similar findings.

Not only is there scientific evidence for a correlation between abortion and poor mental health including substance abuse, but studies have indicated that abortion is related to problems in intimate relationships (e.g., an increased likelihood of sexual dysfunction, interpersonal communication problems, and separation or divorce.) For example, in a study led by Rue (2004) published in the *Medical Science Monitor*, 6.2% of Russian women and 24% of American women sampled reported sexual problems that they directly attributed to a prior abortion.

Perhaps most alarming are the results of new research revealing that emotional difficulties and unresolved grief responses associated with abortion may harm parenting by reducing parental responsiveness to child needs through interference with attachment processes

or by instilling anger, which is a common component of grief. In one study Coleman and colleagues (2005) reported that women with one prior abortion had a 144% higher risk for engaging in child physical abuse than women without an abortion experience. A history of one miscarriage/stillbirth was not associated with increased risk of child abuse. Scientific evidence indicating that the loss of a child through abortion may negatively impact the ability of some women to nurture later-born children contradicts the pro-choice argument that abortion will result in a reduction of child maltreatment if all children are born as the result of wanted pregnancies.

Finally several large-scale studies have shown a higher risk of death associated with abortion compared to childbirth. A record-based study conducted in Finland by Gissler and colleagues (1997) established post-pregnancy death rates within one year that were nearly 4 times greater among women who aborted their pregnancies than among women who delivered their babies. The suicide rate was nearly 6 times greater among women with a history of abortion compared to women who gave birth.

In a U.S. record-based study conducted by Reardon and colleagues (2002), with adjustments for age, women who aborted when compared to women who delivered, were 62% more likely to die from any cause. Increased risk estimates associated with specific causes of death were also identified in the study: violent causes (81%), suicide (154%), and accidents (82%). In a third study published last year

by Gissler and colleagues (2004), the mortality rate was lower after a birth (28.2 per 100,000) than after an induced abortion (83.1 per 100,000). In Gissler and colleagues' (2005) most recent publication, an age-adjusted induced abortion related mortality rate from all external causes (homicide, suicide, unintentional injuries) of 60.3 per 100,000 was observed in comparison to a 10.2 age-adjusted mortality rate per 100,000 for pregnancy or birth. For suicide, the age-adjusted mortality rate for abortion was 33.8, compared to 5.5 for pregnancy or birth.

The newest wave of research is higher quality science based on several collective strengths of the studies: (a) the use of an appropriate control group (unintended pregnancy carried to term), (b) controls for pre-existing psychological problems, (c) controls for personal characteristics and situational factors associated with the choice to abort, (d) collection of data for several years beyond the abortion, (e) use of medical claims data (with diagnostic codes assigned by trained professionals), (f) and use of large samples (most in the 1000s and many nationally representative.)

Table 1 provides an overview of 15 studies my colleagues and I have conducted since 2002. The methodological strengths of each study are highlighted. Based on the improvements characterizing these studies, prior work indicating that abortion is an emotionally benign medical procedure for most women should be questioned. In all the analyses we conducted, women with a history of abortion were never found to be at a lower risk

for mental health problems than their peers with no abortion experience. When compared to unintended pregnancy carried to term and other forms of perinatal loss, abortion poses more significant mental health risks.

Women with a history of induced abortion are at a significantly higher risk for the following:

- Inpatient and outpatient psychiatric claims
- Adjustment disorders
- Bipolar disorder
- Depressive psychosis
- Neurotic depression, and schizophrenia
- Substance use (illicit drugs and alcohol) generally and specifically during a subsequent pregnancy
- Clinically significant depression

and anxiety

- Parenting difficulties
- Death from various violent and natural causes

Researchers need to conduct more substantive individual interviews from large, geographically diverse samples in order to more fully understand the depth and breadth of experiences. As noted by Kero and colleagues (2001) "*The relief to be saved from unwanted parenthood did not exclude painful feelings that may reflect experiences of ethical conflicts and feelings of loss. This complexity is seldom recognized in abortion studies.*"

The conclusion that abortion increases mental health risks is reasonable and scientifically accurate,

rendering it misleading to suggest to women that abortion has no significant mental health risks, much less is "psychologically safer" than carrying to term. Women facing an unwanted pregnancy often feel desperate and alone, fearing loss of their personal autonomy, destruction of their plans for the future, loss of others' esteem, and altered relationships in addition to viewing a baby as a responsibility that they are ill-prepared to assume. What women typically fail to see is how their decision to abort may significantly compromise the quality of their own lives and those closest to them for many years beyond the decision. They also frequently fail to see the many life enhancing aspects of having a child.

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Health services utilization after induced abortions in Ontario: A comparison between community clinics and hospitals. *American Journal of Medical Quality*, 16, 99-106.

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Reardon, D. C., Cogle, J., Rue, V. M., Shuping, M., Coleman, P. K., & Ney, P. G. (2003). Psychiatric admissions of low-income women following abortion and childbirth. *Canadian Medical Association Journal*, 168, 1253-1256.

Rue, V. M., Coleman, P. K., Rue, J. J., & Reardon, D. C. (2004). Induced abortion and traumatic stress: A preliminary comparison of American and Russian women. *Medical Science Monitor*, 10, SR5-S16.



Psychology of Abortion Studies Published Since 2002

Table 1

| <i>Publication information</i> | <i>Comparison groups</i> | <i>Data source and sample demographics</i> | <i>Outcomes examined</i> | <i>Controls</i> | <i>Positive methodological features</i> | <i>Results</i> |
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| 1) Coleman, P. K., Reardon, D. C., Rue, V., & Cougle, J. (2002). State-funded abortions vs. deliveries: A comparison of outpatient mental health claims over four years. <i>American Journal of Orthopsychiatry</i> , 72, 141-152. | Women who aborted (n=14,297) or delivered a child (n=40,122) while receiving medical assistance from the state of California (Medi-Cal) in 1989 and who had no psychiatric claims for 1 yr prior to pregnancy resolution. Delivery group had no subsequent abortions. | California Department of Health Services Medi-Cal data All low-income Delivery: Avg. age: 25.4 Avg. number of mos. of eligibility: 27 Abortion: Avg. age: 24.6 Avg. number of mos. of eligibility: 31 | Out-patient mental health claims – total number and numbers for specific diagnoses | - Pre-pregnancy psych-ological difficulties - Age - Months of eligibility | - Used actual claims data, eliminating the concealment problem - Avoids recruitment and retention problems - Eliminated cases with previous psychological claims - With claims data, avoids simplistic forms of assessment - Comparison groups are likely very similar except for the abortion experience - Extended time frame, with repeated measurements enabling more confidence in the causal question | Within 90 days after pregnancy resolution, the abortion group had 63% more total claims than the birth group, with the percentages equaling 42%, 30%, 16%, and 17% for the 1 st 180 days, yr 1, yr 2 and across the full 4-yr study period respectively. Across the 4-yrs, the abortion group had 21% more claims for adjustment reactions than the birth group, with the percentages equaling 95%, 40%, and 97% for bipolar disorder, neurotic depression, and schizophrenia respectively. |
| 2) Reardon, D. C., Cougle, J., Rue, V. M., Shuping, M., Coleman, P. K., & Ney, P. G. (2003). Psychiatric admissions of low-income women following abortion and childbirth. <i>Canadian Medical Association Journal</i> , 168, 1253-1256. | Women who aborted (n=15,299) or delivered a child (n=41,442) while receiving medical assistance from the state of California (Medi-Cal) in 1989 and who had no psychiatric claims for 1 yr prior to pregnancy resolution. Delivery group had no subsequent abortions. | California Department of Health Services Medi-Cal data All low-income Delivery: Avg. age: 25.5 Avg. # of mos. of eligibility: 27 Abortion: Avg. age: 24.8 Avg. # of mos. of eligibility: 31 | In-patient mental health claims – total number and numbers for specific diagnoses | - Pre-pregnancy psych-ological difficulties - Age - Months of eligibility | - Used actual claims data, eliminating the concealment problem - Avoids recruitment and retention problems - Eliminated cases with previous psychological claims - With claims data, avoids simplistic forms of assessment - Comparison groups are likely very similar except for the abortion experience - Extended time frame, with repeated measurements enabling more confidence in the causal question | Within 90 days after pregnancy resolution, the abortion group had 160% more total claims than the birth group, with the percentages equaling 120%, 90%, 111%, 60%, 50%, and 70% for the 1 st 180 days, yr 1, yr 2, yr 3, yr 4, and across the full 4-yr study period respectively. Across the 4-yrs, the a bortion group had 110% more claims for adjustment reactions than the birth group, with the percentages equaling 90%, 110%, and 200% for depressive psychosis, single and recurrent episode, and bipolar disorder respectively. |

Psychology of Abortion Studies Published Since 2002

Table 1, continued

| <i>Publication information</i> | <i>Comparison groups</i> | <i>Data source and sample demographics</i> | <i>Outcomes examined</i> | <i>Controls</i> | <i>Positive methodological features</i> | <i>Results</i> |
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| 3) Reardon, D. C., Cogle, J., Ney, P. G., Scheuren, F., Coleman, P. K., & Strahan, T. W. (2002). Deaths associated with delivery and abortion among California Medicaid patients: A record linkage study. <i>Southern Medical Journal</i> , 95, 834-841. | Women who aborted or delivered while receiving medical assistance from the state of California (Medi-Cal) in 1989 and died between 1989 and 1997 (n=1,713) | California Medi-Cal records and death certificates All low-income Delivery: Avg. age: 25.6 Abortion: Avg. age: 24.8 | Death due to various violent and natural causes | - Pre-pregnancy psych-ological difficulties - Age | - Used actual claims data, eliminating the concealment problem - Eliminated cases with previous psychological claims - Avoids recruitment and retention problems - Comparison groups are likely very similar except for the abortion experience - Covered 8 yrs post-pregnancy | - With adjustments for age, women who aborted when compared to women who delivered were 62% more likely to die from any cause. More specific percentages are given below. Violent causes: 81% Suicide: 154% Accidents: 82% All natural causes: 44% AIDS: 118% Circulatory disease: 187%, Cerebrovascular disease: 446% Other heart diseases; 159% - Fairly similar results were obtained when we controlled for prior psychiatric history as well. |
| 4) Coleman, P. K., Reardon, D. C., Rue, V., & Cogle, J. (2002). History of induced abortion in relation to substance use during subsequent pregnancies carried to term. <i>American Journal of Obstetrics and Gynecology</i> , 187, 1673-1678. | Women who carried a pregnancy to term with a history of one prior abortion (n=74) were compared to women with one prior birth (n=531) and no prior pregnancies (n=738) | National Pregnancy and Health Survey Avg. age: 26.5 yrs Marital status Married: 71.5% Not married: 29.5% Ethnicity Hispanic: 18.4% Black: 11.4% White: 64.3% An avg. of 5 yrs had elapsed since a prior abortion and an avg. of 3.42 yrs since a prior birth. | Substance use of various forms during pregnancy | Results were stratified by potentially confounding factors (marital status, income, ethnicity, and time elapsed since a prior abortion or birth) | - Nationally representative, racially diverse sample - Measured substance use at a time when abortion-related stress is likely to be exacerbated | - Compared with women who had previously given birth, women who aborted were significantly more likely to use marijuana (929%), various elicit drugs (460%), and alcohol (122%) during their next pregnancy. Results with only first-time mothers were similar. - Differences between the abortion group and the prior birth and no prior pregnancy groups relative to marijuana and use of any elicit drug were more pronounced among married and higher income women and when more time had elapsed since the prior pregnancy. - Differences relative to alcohol use were most pronounced among the white women and when more time had elapsed since the prior pregnancy. |

Psychology of Abortion Studies Published Since 2002

Table 1, continued

| <i>Publication information</i> | <i>Comparison groups</i> | <i>Data source and sample demographics</i> | <i>Outcomes examined</i> | <i>Controls</i> | <i>Positive methodological features</i> | <i>Results</i> |
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| <p>5) Cogle, J., Reardon, D. C., & Coleman, P. K. (2003). Depression associated with abortion and childbirth: A long-term analysis of the NLSY cohort. <i>Medical Science Monitor</i>, 9, CR105-112.</p> | <p>First pregnancy event of either an abortion (n=293) or delivery (n=1,591) between 1980 and 1992</p> | <p>National Longitudinal Survey of Youth Abortion: Avg. age: 30 Ethnicity: Hispanic: 23% Black: 24% White: 57% Avg. income in 1992: \$33,554 Delivery: Avg. age: 30 Ethnicity: Hispanic: 21% Black: 24% White: 55% Avg. income in 1992: \$33,969 Avg. of 8 yrs had elapsed since the 1st pregnancy event</p> | <p>- Symptoms of clinical depression</p> | <p>- Prior psychological state, age, race, marital status, divorce history, education, and income (stratification by ethnicity, current marital status, and history of divorce)</p> | <p>- Nationally representative, racially diverse sample - Controlled for prior psychological state and several other variables - Extended time frame</p> | <p>- Women whose 1st pregnancies ended in abortion were 65% more likely to score in the "high-risk" range for clinical depression. - Differences between the abortion and birth groups were greatest among the demographic groups least likely to conceal an abortion (White: 79% higher risk; married: 116% higher risk; 1st marriage didn't end in divorce: 119% higher risk).</p> |
| <p>6) Coleman, P. K., Reardon, D. C., & Cogle, J. (2002). The quality of the caregiving environment and child developmental outcomes associated with maternal history of abortion using the NLSY data. <i>Journal of Child Psychology and Psychiatry and Allied Disciplines</i>, 43, 743-758.</p> | <p>Mothers with (n=672) and without a history abortion (n=4,172) prior to childbirth, with children between the ages of 1 and 13 yrs</p> | <p>National Longitudinal Survey of Youth Post-abortive: Avg. age: 31 Ethnicity: Hispanic: 25% Black: 31% White: 44% Avg. income in 1992: \$30,162 Non post-abortive: Avg. age: 31 Ethnicity: Hispanic: 22% Black: 30% White: 48% Avg. income in 1992: \$30,325</p> | <p>- Emotional and Cognitive support in the home - Math, reading, and vocabulary tests - Problems behaviors</p> | <p>- Ethnicity - Marital history - Number of children - Child age and gender - Maternal age, depression, and education - Family income</p> | <p>- One of very few studies to consider the effects of maternal history of abortion on children's behavior and development - Large, nationally representative, racially diverse sample - Extended time frame - Controls for several potentially confounding variables</p> | <p>- Lower emotional support in the home among 1st born 1- to 4-year-olds of mothers with a history of abortion. - When there was a history of abortion, children (2nd & 3rd born. 1 to 4-yr-olds) of divorced mothers experienced lower levels of emotional support than children of non-divorced women. Decreased emotional support was not observed among children of divorced women with no history of abortion. - More behavior problems among 5 to 9-yr-olds of mothers with a history of abortion.</p> |

Psychology of Abortion Studies Published Since 2002

Table 1, continued

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| <p>7) Coleman, P. K., Reardon, D. C., & Cogle, J. (2005) Substance use among pregnant women in the context of previous reproductive loss and desire for current pregnancy. <i>British Journal of Health Psychology, 10, 255-268.</i></p> | <p>Women with a history of abortion (n=280), miscarriage (n=182), and stillbirth (n=30) were compared to women without the respective forms of loss: no miscarriage, n=221; no abortion, n=144; no stillbirth, n=371 Comparisons were also made based on pregnancy wantedness</p> | <p>Washington DC Metropolitan Area Drug Use and Pregnancy Study Full-sample demographics (1992): Married: 32% Age: 18 or under: 9.3% 19-25: 37.4% 26-34: 40.3% 35 or older: 7.8% Income: Under \$10,600: 35% \$10,600 - \$19,000:16% \$19,100 - \$30,000:12% \$30,100 - \$50,000:12% Over \$50,000:14% Ethnicity: Black: 79.3%, White: 12.4%, Other:4%</p> | <p>Use of alcohol, illicit drugs, and cigarettes during pregnancy</p> | <ul style="list-style-type: none"> - Other forms of loss - Age - Marital status - Trimester in which prenatal care was sought -Education -Number in household | <ul style="list-style-type: none"> - Mostly Black sample (few if any post-abortion studies have focused on this group) - Enabled comparison of various forms of perinatal loss | <ul style="list-style-type: none"> - No differences were observed in the risk of using any of the substances measured during pregnancy relative to a prior history of miscarriage or stillbirth. - A prior history of abortion was associated with a significantly higher risk of using marijuana (201%), cocaine-crack (198%), cocaine-other than crack (406%), any illicit drugs (180%), and cigarettes (100%). - No differences were observed in the risk of using various substances relative to pregnancy wantedness, with the exception of the risk of cigarette use being higher when pregnancy was not wanted (90%). |
| <p>8) Reardon, D. C., Coleman, P. K., & Cogle, J. (2004) Substance use associated with prior history of abortion and unintended birth: A national cross sectional cohort study. <i>Am. Journal of Drug and Alcohol Abuse, 26, 369-383.</i></p> | <p>Women with prior histories of delivering an unintended pregnancy (n=535), abortion (n=213), or no pregnancies (n=1144)</p> | <p>National Longitudinal Survey of Youth Demographics measured in 1988 Delivery: Married: 66.5%, Avg. age: 26, Avg. income: \$22,949 Abortion: Married: 43.7%, Avg. age: 26, Avg. income: \$27,076 No pregnancies: Married: 35.4%, Avg. age: 26.3, Avg. income: \$29,667. An avg. of 4 yrs since the target pregnancy</p> | <p>Use of marijuana, cocaine, and alcohol</p> | <ul style="list-style-type: none"> - Age - Ethnicity - Marital status - Income - Education - Pre-pregnancy self-esteem and locus of control | <ul style="list-style-type: none"> - Nationally representative, racially - diverse sample - Controlled for prior psychological state and other variables - Extended time frame - All women were experiencing an unintended pregnancy | <ul style="list-style-type: none"> - Compared to women who carried an unintended first pregnancy to term, those who aborted were 100% more likely to report use of marijuana in the past 30 days and 149% more likely to use cocaine in the past 30 days (only approached significance). Women with a history of abortion also engaged in more frequent drinking than those who carried an unintended pregnancy to term. - Except for less frequent drinking, the unintended delivery group was not significantly different from the no pregnancy group |

Psychology of Abortion Studies Published Since 2002

Table 1, continued

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| 9) Cogle, J., Reardon, D. C., Coleman, P. K., & Rue, V. M. (2005). General-ized anxiety associated with unintended pregnancy: A cohort study of the 1995 National Survey of Family Growth. <i>Journal of Anxiety Disorders, 19</i> , 137-142. | First pregnancy event of either an abortion (n=1,033) or delivery (n=1,813). All were unintended pregnancies | 1995 National Survey of Family Growth Abortion: Ethnicity: Hispanic: 10%, Black: 26%, White: 61% Avg. income: 37% of poverty level Delivery: Ethnicity: Hispanic: 14%, Black: 36%, White: 47% Avg. income: 234% of poverty level Avg. age, both groups: 32. Avg. of 13 yrs since the 1 st pregnancy event | Symptoms of Generalized Anxiety Disorder – lasting for a period of at least 6 months. | - pre-existing anxiety, age, and race (stratification by ethnicity, current marital status, and age) | - Nationally representative, racially - diverse sample - Controlled for prior anxiety - Extended time frame - All women were experiencing an unintended pregnancy | - The odds of experiencing subsequent Generalized Anxiety was 34% higher among women who aborted compared to women who delivered. - Differences between the abortion and birth groups were greatest among the following demographic groups: Hispanic 86% higher risk; unmarried at time of pregnancy: 42% higher risk; under age 20: 46% higher risk. |
| 10) Rue, V. M., Coleman, P. K., Rue, J. J., & Reardon, D. C. (2004). Induced abortion and traumatic stress: A preliminary comparison of American and Russian women. <i>Medical Science Monitor 10</i> , SR 5-16. | Russian (n=331) and U.S. (n=217) women who had experienced one or more abortions and no other forms of loss | Data collected in health care facilities (hospitals, clinics, and physician's offices) by Vincent Rue and colleagues Russian: Avg. age: 28, 59% married, 63% employed full-time U.S.: Avg. age: 34, 49% married, 34% worked full-time An avg. of 5.8 yrs had elapsed since the Russian women's abortions, and 10.6 yrs had elapsed since the U.S. women's abortions | Symptoms of Post Traumatic Stress Disorder | - Severe stress symptoms prior to the abortion - Other stressors pre-and post-abortion - Several demographic variables - Psycho-social variables (harsh discipline, sexual, physical, and emotional abuse, parental divorce, etc.) | - Extensive controls for background variables - One of few cross-cultural comparisons in the literature | - U.S. women reported more stress, PTSD symptoms, and other negative effects than Russian women. - Russian women scored higher on the Pearlman Traumatic Stress Institute Belief Scale, indicating more pronounced disruption of basic needs impacted by trauma (safety, trust, self-esteem, intimacy, and self-control). - No differences relative to perceptions of positive effects (improved partner relationships, feeling better about oneself, relief, feelings of control). - The percentages of Russian and U.S. women who experienced 2 or more symptoms of arousal, 1 or more symptom of re-experiencing the trauma, and 1 or more experience of avoidance (DSM-IV diagnostic criteria) were equal to 13.1% and 65% respectively. |

*Psychology of Abortion Studies Published Since 2002**Table 1, continued*

| <i>Publication information</i> | <i>Comparison groups</i> | <i>Data source and sample demographics</i> | <i>Outcomes examined</i> | <i>Controls</i> | <i>Positive methodological features</i> | <i>Results</i> |
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| 11) Coleman P, Maxey CD, Rue VM, Coyle CT (2005). Associations between Voluntary and Involuntary Forms of Perinatal Loss and Child Maltreatment among Low-Income Mothers. <i>Acta Paediatrica, 94.</i> | The 518 participants included 118 abusive mothers, 119 neglecting mothers, and 281 mothers with no history of child maltreatment Reproductive loss information: 100 women had a history of one abortion and 99 had a history of one miscarriage/ stillbirth | Fertility and Contraception Among Low-Income Child Abusing and Neglecting Mothers in Baltimore MD Study Marital status: Single (78.8%); Separated (18.9%); Married (2.3%). Avg. age: 27. Avg. # of children: 2.64 Ethnicity: Black (79.9%); White (19.7%); Other (4%) Education: >or= 11 years (59%); High school diploma (32%); 13-16 years (9%) | - Child physical abuse - Child neglect | Demographic, personal history, and social variables found to be positively correlated with the forms of child maltreatment examined. - The form of loss not being analyzed | - Use of confirmed cases of child maltreatment - An extended time frame - Diverse sample - Controls for several potentially confounding variables | - Compared to women with no history of perinatal loss, those with 1 loss (voluntary or involuntary) had a 99% higher risk for child physical abuse. - Compared to women with no history of induced abortion, those with 1 prior abortion had a 144% higher risk for child physical abuse. - A history of 1 miscarriage/ stillbirth was not associated with increased risk of child abuse. - Perinatal loss was not related to neglect. |
| 12) Coleman, P. K. (2006). Resolution of Unwanted Pregnancy During Adolescence Through Abortion versus Childbirth: Individual and Family Predictors and Consequences. <i>Journal of Youth and Adolescence.</i> | Adolescents in grades 7-11 who experienced an unwanted pregnancy That was resolved through abortion (n=65) or delivery (n=65) | National Longitudinal Study of Adolescent Health Abortion group: 15 to 19 years of age (76.4%); under 15 (23.6%) Parents' marital status: married (51.8%); not married (48.2%) Parental income: under \$40,000 (52.8%); \$40,000 or more (47.2%) Birth group: 15 to 19 years of age (80.4%); Under 15 (19.6%) Parents' marital status: married (43.6%); not married (56.4%) Parental income: under \$40,000 (63.6%); \$40,000 or more (36.4%) | - Counseling for emotional problems - Trouble sleeping - Cigarette smoking - Marijuana use - Alcohol use - Problems with parents because of alcohol use - School problems because of alcohol use | -Demographic, educational, psychological, and family variables found to predict the choice to abort | - Nationally representative, diverse sample -Exclusive focus on unwanted pregnancies - Implemented controls for several potentially confounding variables - Use of two waves of data - longitudinal | - After implementing controls, adolescents with an abortion history, when compared to adolescents who had give birth, were 5 times more likely to seek counseling for psychological or emotional problems, 4 times more likely to report frequent sleep problems, and they were 6 times more likely to use marijuana. |

Psychology of Abortion Studies Published Since 2002

Table 1, continued

| <i>Publication information</i> | <i>Comparison groups</i> | <i>Data source and sample demographics</i> | <i>Outcomes examined</i> | <i>Controls</i> | <i>Positive methodological features</i> | <i>Results</i> |
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| 13) Reardon, D.C., & Coleman, P. K. (2006). Relative Treatment Rates for Sleep Disorders Following Abortion and Childbirth: A Prospective Record-Based Study. <i>Sleep</i> , 29, 105-106. | 15,345 women who had an induced abortion and 41,479 women who delivered and had no known subsequent history of induced abortion while receiving medical assistance from the state of California (Medi-Cal) in 1989 and who had no sleep claims for 1 yr prior to pregnancy resolution. Delivery group had no later abortions | California Department of Health Services Medi-Cal data All low-income Delivery: Avg. age: 25 Avg. # of mos. of eligibility: 27 Abortion: Avg. age: 25 Avg. # of mos. of eligibility: 31 | Sleep disturbances identified by ICD-9 treatment codes for non-organic sleep disorder and sleep disturbances | - Claims for sleep disorders - Age - Months of eligibility | Used actual claims data, eliminating the concealment problem - Avoids recruitment and retention problems - Eliminated cases with previous sleep claims - With claims data, avoids simplistic forms of assessment - Comparison groups are likely very similar except for the abortion experience - Extended time frame, with repeated measurements enabling more confidence in the causal question | - Women were more likely to be treated for sleep disorders following an induced abortion compared to a birth. -The difference was most pronounced in the first 180 days post pregnancy resolution and was not significant after the third year. Specifically, there was an 85% higher risk for sleep disorders associated with abortion at 180 days and increased risks of 68%, 40%, 41%, and 29% for the 1 st year, 2 nd year, 3 rd year, and across the full 4 year study period respectively. |
| 14) Coleman P, Rue VM, Coyle CT, & Maxey CD (2007). Induced Abortion and Child-Directed Aggression Among Mothers of Maltreated Children, <i>Internet Journal of Pediatrics and Neonatology</i> , 6 (2) | 237 mothers who were residents of Baltimore and were receiving AFDC. Women with and without a history of abortion were compared relative to child-directed physical aggression. All the women had a history of child maltreatment | Fertility and Contraception Among Low-Income Child Abusing and Neglecting Mothers in Baltimore MD Study Avg. age: 28.4 Avg. # of children: 3.5 Ethnicity: Black 72.2% White: 27.8% Education: >or= 11 years (72%); High school diploma (23%); 13-16 years (5%) | Frequency of throwing objects, shoving, slapping, kicking/biting, hitting, and beating Frequency of physical punishment in general | - Non-voluntary perinatal loss - Socio-demographic, family of origin, and partner aggression variables associated with the choice to abort | - Use of controls - Examined a previously under-investigated segment of the population: predominantly poor, Black women | - Abortion history was associated with significantly more frequent maternal slapping, hitting, kicking/biting, beating, and use of physical punishment in general. |

Psychology of Abortion Studies Published Since 2002

Table 1, continued

| <i>Publication information</i> | <i>Comparison groups</i> | <i>Data source and sample demographics</i> | <i>Outcomes examined</i> | <i>Controls</i> | <i>Positive methodological features</i> | <i>Results</i> |
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| <p>15) Coleman, P. K., Rue, V., Spence, M., & Coyle, C. (2008). Abortion and the sexual lives of men and women: Is casual sexual behavior more appealing and more common after abortion? <i>International Journal of Clinical and Health Psychology</i>.</p> | <p>Non-institutionalized U.S. residents, ages 18 to 59.</p> <p>Men and women with and without abortion experience.</p> | <p>National Health and Social Life Survey (NHLS)</p> <p>Among the males sampled 105 (12%) reported having experienced a partner abortion and 767 (88%) did not; whereas among the females, 214 (19.6%) reported having had an abortion and 877 (80.4%) did not.</p> <p>For the full sample, 43% were female and 57% were male. The majority of the respondents were White (71.4%), with 16% Black, 9.4% Hispanic, 1.9% Asian/Pacific Islanders, and 1.2% Native Americans.</p> <p>Education: 14.5% had not graduated from high school, 63% were high school graduates, 15.5% were college graduates, and 6.9% reported an advanced degree.</p> | <p>1) Endorsed appeal of impersonal sexual behaviors (sex with more than one partner, forcing another to have sex, being forced to have sex, watching others have sex, sex with strangers.)</p> <p>2) Willingness to have sex with someone only if in love.</p> <p>3) Number of sex partners in the last year.</p> <p>4) Sexual behavior with a friend and sexual behavior with an acquaintance over the past 12 mos.</p> <p>5) Impersonal sexual behaviors that occurred at least once in the last 12 months (group sexual activity, sex during a casual encounter, forced sexual activity, payment for sexual activity, and purchasing or renting an x-rated video.)</p> | <p>Controls for family of origin, socio-demographic, reproductive history, and sexual history variables predictive of the choice to abort.</p> <p>Female predictors of abortion: first vaginal intercourse, having lived with both parents at age 14, number of live births, having had a miscarriage, frequency of religious attendance, age.</p> <p>Male predictors of a partner abortion: age left home, educational level attained, partner miscarriage, marital status.</p> | <p>- Use of controls.</p> <p>- Inclusion of men</p> <p>- Large, nationally representative, ethnically diverse sample.</p> <p>- First published study to explore associations between abortion and casual sex.</p> | <p>-Using the female data, abortion was associated with more positive attitudes toward sex with strangers and with being forced to have sex.</p> <p>-With the male data, a partner abortion was associated with attitudes endorsing sex with more than one partner and with strangers.</p> <p>-Both men and women with an abortion experience reported higher levels of disagreement with a statement reflecting willingness to have sex only if in love, reported more sex partners in the last year, and were significantly more likely to have sex with an acquaintance.</p> <p>-Males who experienced a partner abortion were more inclined to have sex with a friend compared to males who never experienced a partner abortion.</p> <p>-Among women, an abortion history was associated with a higher likelihood of engagement in specific impersonal sexual behaviors in the previous 12 months: sex during a casual encounter, having forced another to have sex, having been forced by another to have sex.</p> <p>-Engagement in group sex, sex during a casual encounter, having paid for or having been paid for sex, and having purchased or rented an X-rated video were associated with a partner abortion among the males.</p> |