

with those who delivered their babies. Emotional support for and behavioural problems among children of women who have had abortions may also be adversely affected.<sup>6</sup>

It would appear that the study by Reardon and associates<sup>2</sup> published recently in *CMAJ* is not the first to present empirical evidence that abortion is a severe risk factor for substantial emotional and physical trauma.

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#### References

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One problem with the study by David Reardon and associates,<sup>1</sup> which Brenda Major<sup>2</sup> mentions only briefly in her commentary, is that the most relevant comparison was not performed. Reardon and associates compared women who delivered babies with women who had abortions. Compared with women who are willing to have babies, women who abort their pregnancies may indeed experience greater psychological suffering. However, it might be more appropriate to ask about the differences between women who undergo abortion and those who want to have an abortion but choose not to because of external pressures or guilt. In such a study, it might be found that abortion was in

fact a relatively healthy psychological event.

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1. Reardon DC, Cogle JR, Rue VM, Shuping MW, Coleman PK, Ney PG. Psychiatric admissions of low-income women following abortion and childbirth. *CMAJ* 2003;168(10):1253-6.
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The health sequelae of abortion are surrounded by enormous controversy, as indicated by the recent article by David Reardon and associates<sup>1</sup> and Brenda Major's related commentary.<sup>2</sup> My colleagues and I have also obtained evidence that women's well-being is adversely affected by abortion. We found that Canadian women who had had an abortion were significantly more likely to experience diminished well-being in the postmenopausal years than those who had not.<sup>3</sup>

However, both research studies (that of Reardon and associates<sup>1</sup> and our own<sup>3</sup>) must be interpreted with caution. Many will rush to conclude that it is the abortion procedure itself that is associated with psychological harm resulting in mental illness or diminished well-being. These studies appear to provide evidence that women who have abortions are significantly less likely to experience health and wellness in the short- and long-term compared with women who have not undergone this procedure. Yet from the data in these studies, it is impossible to determine whether it is the procedure, the life circumstances or demographic profiles of women seeking abortion, or concomitant medical factors more commonly found in women seeking termination of pregnancy that predispose the women to poorer health outcomes. Surely those on both sides of the debate would agree that more research is needed to explore these questions.

Because the abortion debate is highly charged and clouded with ideological, political, religious and eco-

nomical influences, it is sometimes difficult to objectively determine what is factual and credible scientific information and what represents sexual and philosophical ideology. The medical and academic communities are becoming aware that "researcher neutrality" may well be an oxymoron. *CMAJ* is to be commended for allowing both sides to present their evidence. With such open debate, it is less likely that the truth will be stretched for theological or philosophical reasons or that factual evidence will be dismissed or negated for ideological and political reasons.

#### Stephen Genuis

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#### [One of the authors of the research article responds:]

With few words to respond to these letters on my article<sup>1</sup> and Brenda Major's commentary,<sup>2</sup> I refer readers to *Forbidden Grief*<sup>3</sup> wherein my literature review provides a context for the interpretation of our results. See also *Stephen's Guide to the Logical Fallacies*,<sup>4</sup> giving attention to fallacies of distraction, ad hominem attacks and appeals to authority.

Our methodology was identical to David and colleagues.<sup>5</sup> Both David and Major were on the American Psychological Association (APA) panel established in 1987 to defend abortion's safety during the inquiry conducted by US Surgeon General C. Everett Koop. All members of that panel have publicly advocated for liberal access to abortion. They especially cited David's study as an example of important research. To dismiss our study one must dismiss the expertise of both David and the APA panel that relied on his work.<sup>6</sup>

In 1989, after reviewing that report, Koop concluded the available research was inadequate for drawing definitive conclusions. That his nonconclusion continues to be distorted by ideologues into evidence that abortion has no psychological risks is a sign of desperation.<sup>3</sup>

We welcome critical analyses. The claim that abortion is beneficial to women should be reviewed similarly. Even-handed critics will quickly discover that the assumed benefits of abortion rest solely on anecdotal evidence. There are no studies documenting significant, statistically measurable benefits. Even smoking was once thought to have health benefits.<sup>7</sup>

Major and Gail Erlick Robinson explain our results with the hypothesis that mentally disturbed women are more likely to choose abortion. If true, this argument merely strengthens our conclusion that a history of abortion is a marker for mental illness.

Major's own research team has concluded that abortion can be the direct cause of post-traumatic stress disorder.<sup>8</sup> Three of my coauthors (Vincent Rue, Martha Shuping and Philip Ney) regularly treat women suffering from abortion-related psychiatric illnesses.

More research is clearly needed. Publication should not hinge on political litmus tests.

#### David C. Reardon

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1. Reardon DC, Cogle JR, Rue VM, Shuping MW, Coleman PK, Ney PG. Psychiatric admissions of low-income women following abortion and childbirth. *CMAJ* 2003;168(10):1253-6.
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#### [The author of the commentary responds:]

As Stephen Genuis observes, "it is sometimes difficult to objectively determine what is factual and credible scientific information and what represents sexual and philosophical ideology." Researcher bias clearly can affect the research process. Nowhere is this more obvious than in research on abortion. David Reardon has quite explicitly stated his intentions to use data such as those he reported in *CMAJ*<sup>1</sup> to affect abortion-related legislation, bring litigation against physicians who perform abortions and reduce women's access to abortion.<sup>2</sup>

It is an error, however, to assume that because researcher neutrality is difficult to achieve, what passes for "evidence" on both sides of politically charged issues is likely to be equally valid and deserving of equal airing. Not all research is biased. It is possible to distinguish good science from bad. Good science is based on established scientific methods, eliminates confounders and uses appropriate control or comparison groups. The study by Reardon and his associates<sup>1</sup> is not good science.<sup>3</sup> It inappropriately used women who carried a (likely wanted, planned) pregnancy to term as a comparison group for women who aborted a (likely unwanted, unplanned) pregnancy. More appropriate comparison groups include women who carried a pregnancy to term and gave the child up for adoption, and women who wanted an abortion but who were denied one or did not obtain one because of external pressures or guilt, as Aaron Keshen points out in his letter.

Reardon and associates also failed to control adequately for demographic, social and psychological differences that likely existed at the time of the pregnancy between women who subsequently aborted versus those who carried their pregnancies to term. The inference that the abortion procedure

itself caused postpregnancy differences observed between these 2 groups is faulty scientific reasoning and misleading. The studies referred to by Annie Banno, all of which were conducted by Reardon, are plagued by similar methodological problems.

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#### [The editors respond:]

The editors of *CMAJ* respond in this issue's editorial (page 93).

#### Adverse events with Zyban (bupropion)

Barbara Mintzes and associates<sup>1</sup> expressed concern last year over differences between countries in physicians' reporting of adverse reactions to prescription drugs. To illustrate, they cited significant differences in the reported rates of adverse reactions and deaths attributed to Zyban (bupropion) in Canada and the United Kingdom. We have data suggesting that the actual rates of adverse reactions related to the use of Zyban for smoking cessation in community clinical practice may exceed rates reported elsewhere.

Zyban has been commercially available for smoking cessation since 1998. Most of the evidence pertaining to efficacy and rates of adverse reactions stems from 2 large trials,<sup>2,3</sup> both funded by GlaxoSmithKline, the maker of Zyban. These studies showed a relatively low rate of adverse reactions and claimed that only 6% to 8%<sup>2</sup> and 11.9%<sup>3</sup> of patients discontinued the drug because of