Evidence-Based Informed Consent for Abortion: Toward More Systematic Literature Reviews

AAPLOG 2010

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Presentation Objectives

1. Review the basic principles of evidence-based medicine.

Presentation Objectives

2. Briefly address extreme departures from evidence-based medicine relative to informed consent practices pertaining to abortion and mental health.

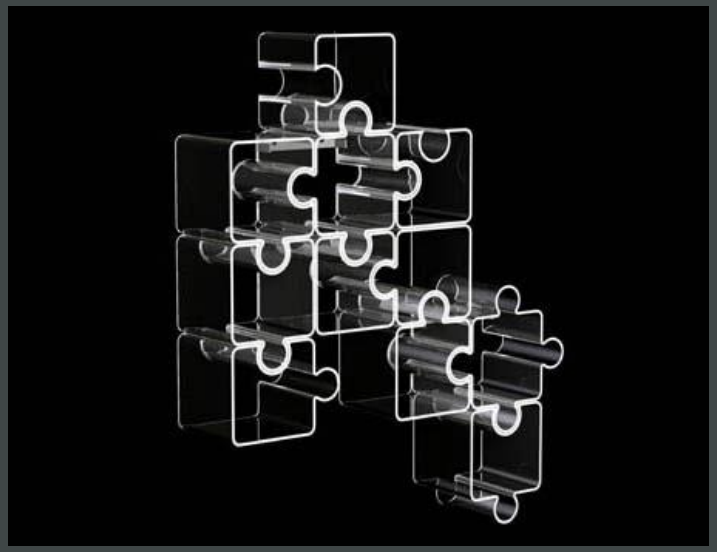
Presentation Objectives

3. Discuss the need for easily interpretable synopses of the literature to address the lag between research and practice.

4. Address the basics of strong qualitative and quantitative reviews and the urgent need for the latter type.

Presentation Objectives

5. Discuss results of a recently conducted meta-analysis of the abortion and mental health literature.



6. Describe how data generated from quantitative reviews can yield easily comprehended, reliable data.

Evidence-Based Medicine

Sackett and colleagues (1996) defined evidence-based medicine as *a process integrating individual clinical expertise with the best external evidence and patient choice* to maximize the quality and quantity of life for the patient.

Two Basic Challenges of Evidence-Based Medicine

1. Produce accurate, easily understood synopses of the best available evidence.

2. Convey the information to clinicians and motivate them to use it to inform their practice.

Evidence-Based Medicine

The U.S. Preventive Services Task Force has identified ***basic guidelines*** for **how** ***scientific evidence should be used to inform practice.*** They are based on an analysis of risks and benefits as established in the scientific literature.

The U.S. Preventive Services Task Force Guidelines

Level A: Good scientific evidence indicates the benefits of the service substantially outweigh the risks with clinicians advised to discuss the service with eligible patients.

Level B: Fair scientific evidence indicates the benefits of the service outweigh the risks with clinicians encouraged to discuss the service with eligible patients.

Level C: At least fair scientific evidence indicating benefits are provided by the service, but the balance between benefits and risks precludes general recommendations. Clinicians are advised to only offer the service if there are special considerations.

The U.S. Preventive Services Task Force Guidelines

Level D: At least fair scientific evidence indicates the risks of the service outweigh benefits with clinicians advised not to routinely offer the service.

Level I: Scientific evidence is deficient, poorly done, or conflicting precluding assessment of risk benefit ratio. Clinicians advised to convey the uncertainty of evidence surrounding the service to patients.

Task Force Guidelines

According to these guidelines, with virtually no evidence of psychological benefits of abortion and well-documented risks, clinicians should be advising patients of the serious risks and they should not be routinely offering the procedure.

Evidence-Based Medicine

Ironically as awareness of the need for evidence-based medicine has grown over the last decade in the U.S. and strategies are being developed to revamp health care delivery to close the gap between knowledge and practice, the divide is greater than ever relative to conferring *accurate unbiased information on risks of abortion to women considering the procedure.*

Evidence-Based Medicine

Complex socio-political forces are obviously behind the evidence-based practice lag relative to abortion…however, my focus here is on describing strategies for deriving valid, easily interpreted, hard to ignore reviews of the literature.

What exactly are women currently being told in U.S. clinics?

"Research studies indicate that emotional responses to legally induced abortion are largely positive. They also indicate that emotional problems resulting from abortion are rare and less frequent than those following childbirth."

- from the PP Fact Sheet ***The Emotional Effects of Induced Abortion***

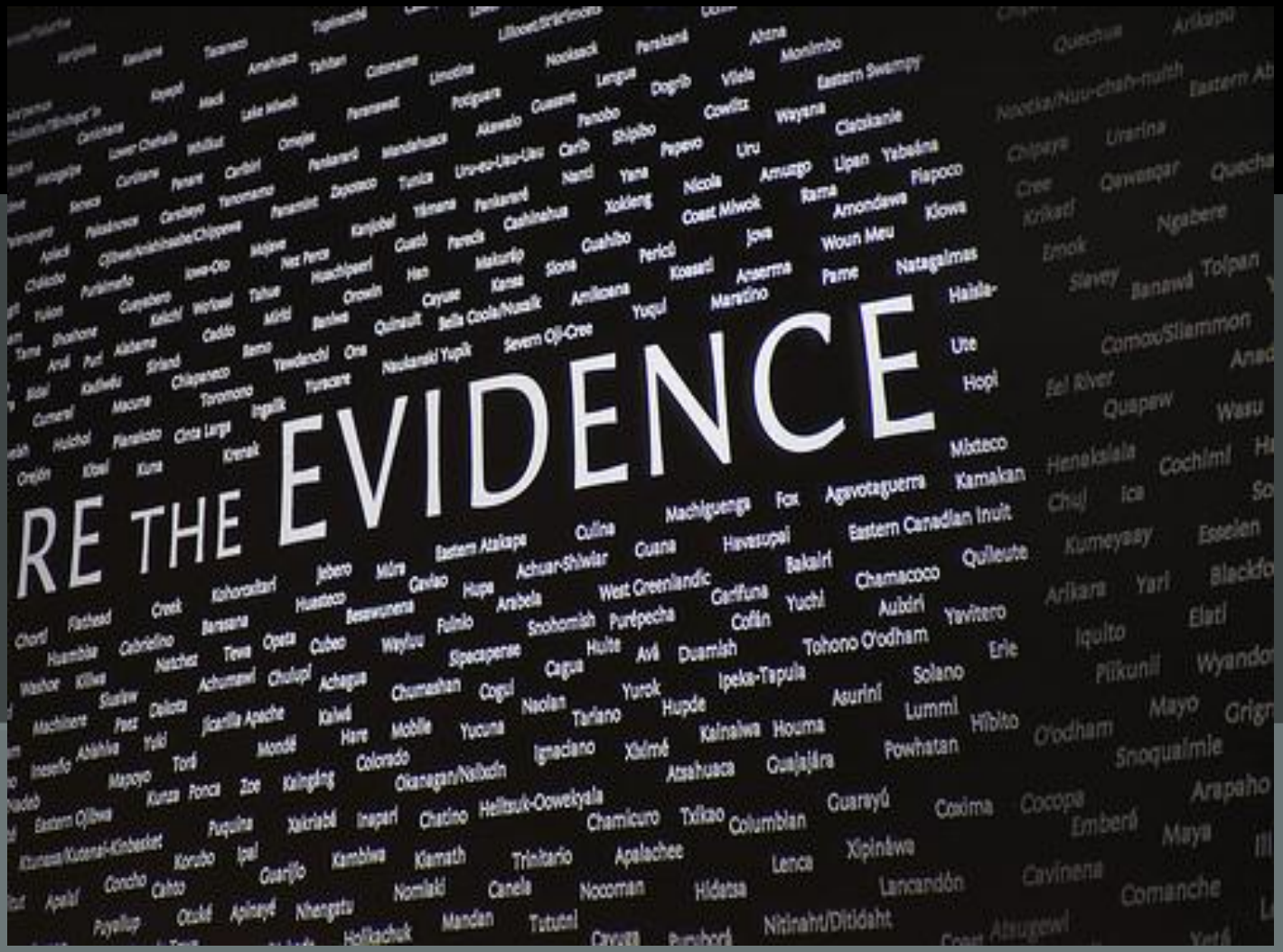
More from the PP "fact" sheet……

"Anti-family planning activists circulate unfounded claims that a majority of the 29% of pregnant American women who choose to terminate their pregnancies suffer severe and long-lasting emotional trauma as a result. They call this nonexistent phenomenon "post-abortion trauma" or "post-abortion syndrome." They hope that terms like these will gain wide currency and credibility….."

American Women's Services…

A Northeast U.S. Provider with 15 clinics describes positive emotional responses including *a sense of new hope, feelings of relief, and happiness* on their "fact sheet". In actuality, there is not a single study showing a sense of new hope or increased happiness in conjunction with abortion.

Women are further informed that *"serious psychiatric disturbances after an abortion are rare."*


RE THE EVIDENCE

The truth.....

Literally hundreds of studies have been published world-wide indicating statistically significant associations between induced abortion and adverse psychological outcomes of various forms.

Yet the agenda to misinform continues…..

Authors of 3 recent "professional" qualitative literature reviews arrived at the conclusion that abortion does not pose serious risks above that associated with unintended pregnancy carried to term.

Recently published biased reviews….

American Psychological Association Task Force on Mental Health and Abortion. Report of the American Psychological Association Task Force on Mental Health and Abortion 2008, Washington, DC: American Psychological Association.

Charles VE, Polis CB, Sridhara SK, Blum RW. Abortion and long-term mental health outcomes: a systematic review of the evidence. Contraception 2009; 78: 436-450.

Robinson GE, Stotland NL, Russo NF, Lang JA, Occhiogrosso M. Is There an "Abortion Trauma Syndrome"? Critiquing the Evidence. Harv Rev Psychiatry 2009; 17: 268 – 290.

Primary problems with the reviews..

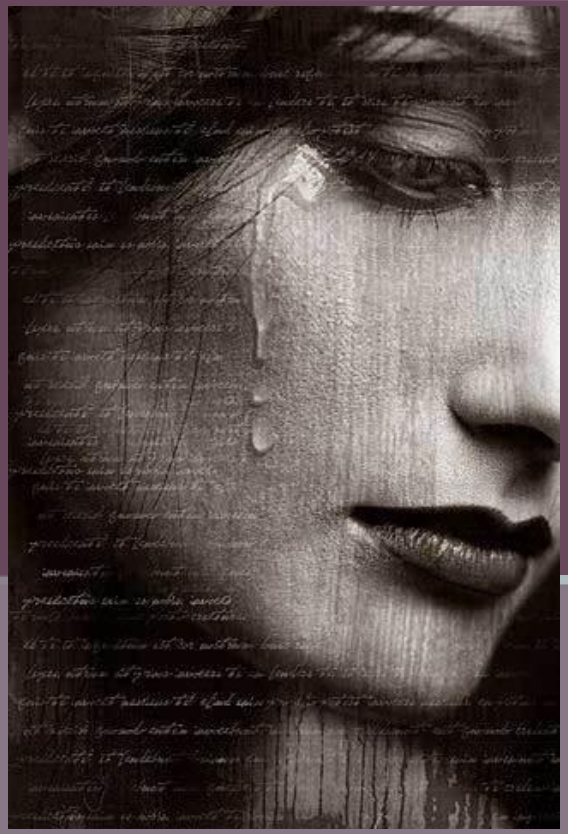
1. Only a few studies have actually included unintended pregnancy carried to term as a control group.

2. Dozens of studies with extensive controls for 3rd variables are not included and no explanations are given. Two reviews left out all studies involving substance abuse.

3. In all 3 reviews, the choice of studies lacks sufficient methodologically-based selection criteria.

4. Quantification of effects is not attempted.

Urgent need for systematic reviews of the evidence



Strong qualitative and quantitative reviews are now urgently needed to counter the claims of the biased reviews and accurately reflect the extensive published research documenting the psychological risks of abortion.

Systematic reviews

To gain a handle on the world literature pertaining to abortion as a true risk factor for mental health problems, peer-reviewed studies published in reputable journals must be evaluated systematically using established scientific protocol.

From "Synthesizing Medical Evidence: Systematic Reviews and Meta-Analyses" (Barker & Carter, 2005)

"The medical literature has long been too large for any physician to master. Approximately 10 million articles have been indexed in MEDLINE, and 2 million new biomedical articles are published each year in 20,000 journals. The traditional tools for harnessing this vast resource have included textbook chapters and narrative reviews. These are now known to be prone to bias, typically highlighting data that match the author's views and background and ignoring contrary evidence."

"In contrast, a systematic review is an attempt to summarize all available data in an unbiased fashion. Systematic reviews are analyses of the medical literature that use searching, appraisal, and data synthesis methods designed to minimize bias and random error."

Basics of a Qualitative Literature Review

In the absence of strict experimental control, risk factors for negative abortion outcomes are established through 2 primary scientific steps:

1) Analysis of individual studies for evidence of causality
2) An integrative analysis of the best evidence to ascertain consistency and magnitude.

A substantive, fair qualitative review will reflect both steps.

Step 1: Analysis of Each Individual Study for Causality

Three criteria are used for this purpose:

a. Abortion must be shown to precede the mental health problem (***time precedence***).

b. Differences in abortion history must be systematically associated with differences in mental health status (*covariation*).

Step 1: Analysis of Each Individual Study

c. Plausible alternative explanations for associations between abortion and mental health must be ruled out.

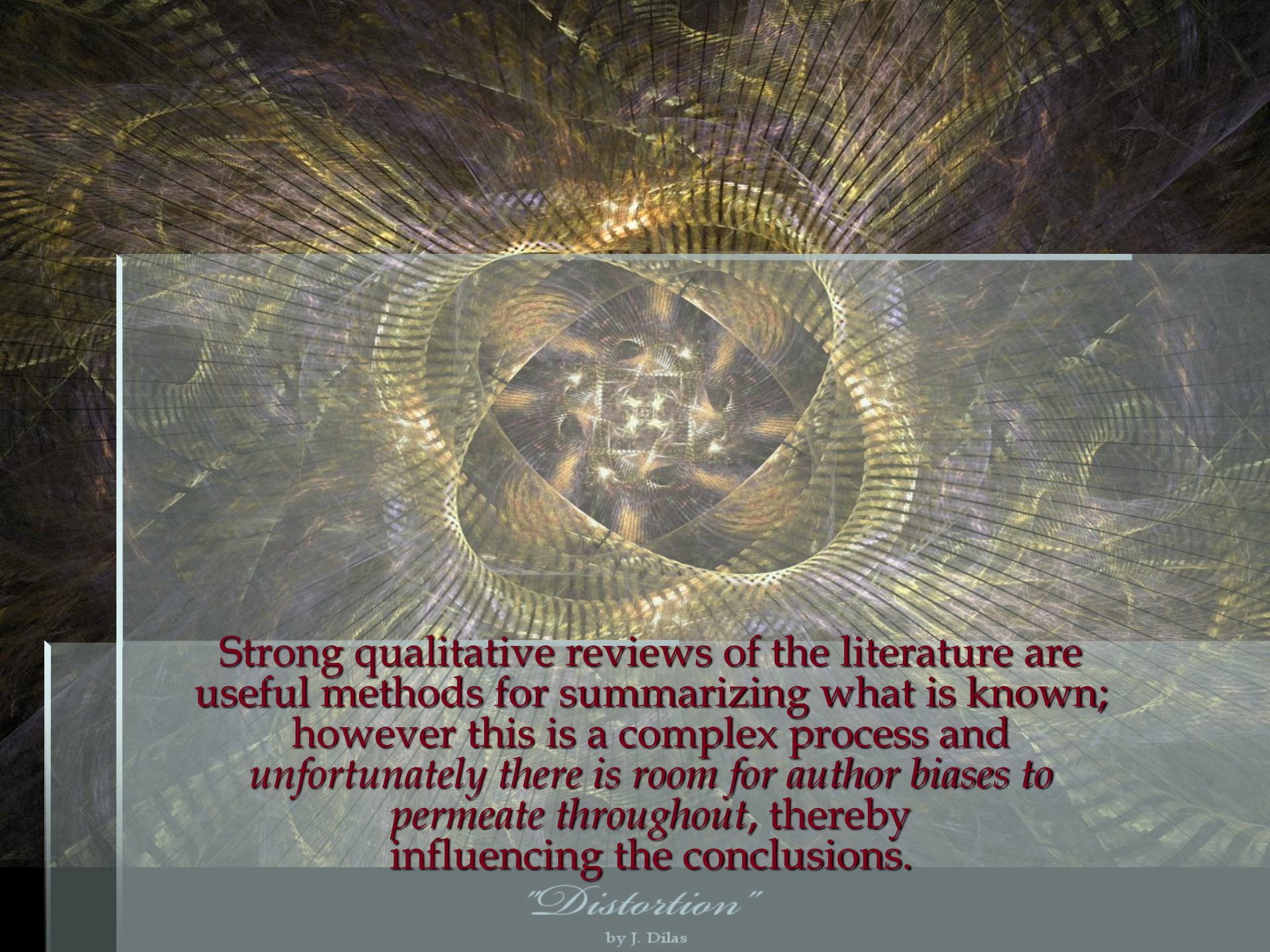
Common methods of controlling for confounds:

- Statistical control
- Matching comparison groups
- Sampling from homogeneous populations

Step 2: Integrative Analysis

After evaluating individual studies, scientists assess the consistency and magnitude of associations across studies.

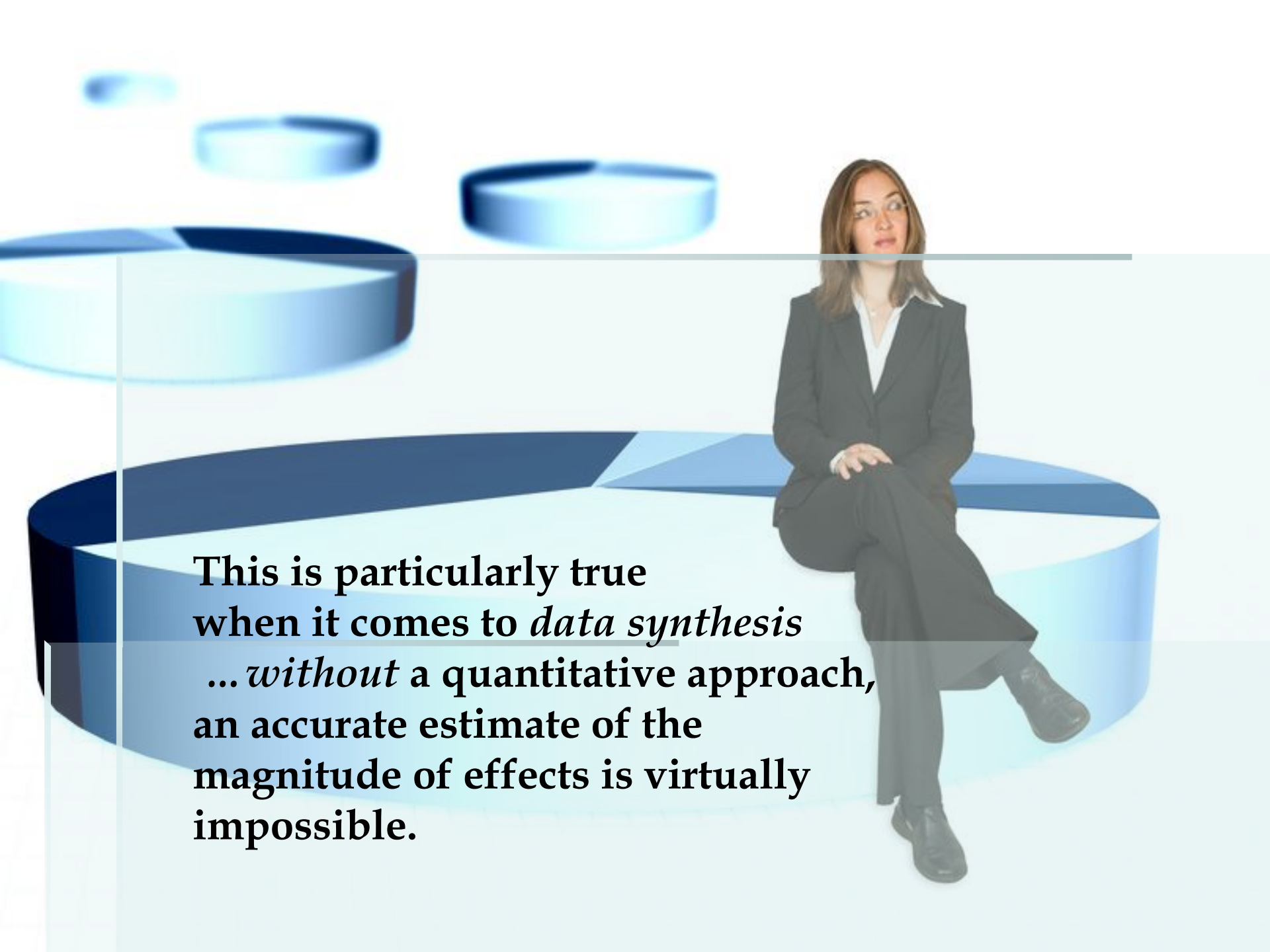
- ***Consistency*** refers to repeated observation of an association in several studies using different people, places, and circumstances.
- ***Magnitude*** (or strength of effect) refers to whether the associations are slight, moderate, or strong. Strong associations across various studies are more likely causal than slight or modest associations.



Strong qualitative reviews of the literature are useful methods for summarizing what is known; however this is a complex process and *unfortunately there is room for author biases to permeate throughout*, thereby influencing the conclusions.

"Distortion"

by J. Dilas



This is particularly true when it comes to *data synthesis* ...*without* a quantitative approach, an accurate estimate of the magnitude of effects is virtually impossible.

Basics of a Quantitative Review

By systematically combining the numerical results from many high quality studies addressing the same general question, (e.g., *is there an association between abortion and mental health?)* very reliable results are produced.

In a quantitative review studies are weighted statistically and meta-analysis offers a logical, more objective alternative to qualitative reviews when the area of study is embedded in political controversy.

Meta-Analysis

Frustrated by the extremely biased reviews published recently, I conducted a meta-analysis knowing the truth of countless women's suffering is in the published data and this is the only reliable and defensible method for pooling the information.

Meta-Analysis: My inclusion Criteria

1. Sample size of 100 or more participants

2. Use of a comparison group (no abortion, pregnancy delivered, or unintended pregnancy delivered.)

3. One or more mental health outcome variable(s): depression, anxiety, alcohol use, marijuana use, or suicidal behaviors

Meta-Analysis: My inclusion Criteria

4. Controls for 3rd variables

5. Use of odds ratios

6. Publication in English in peer-reviewed Journals between 1995 and 2009

Meta-Analysis: Extraction Rules

Extraction rules were also developed to avoid over-representation of samples, statistical dependences, and to insure the most conservative and unbiased assemblage of results.

Meta Analysis: Extraction Rules

1. Relevant studies contributed a maximum of one effect per outcome.
2. When more than one comparison group was reported, comparisons wherein the control group was most closely matched to the abortion group were selected. (*If unintended pregnancy delivered was used, this group was selected and when only pregnancy delivered and no abortion comparison groups were used, the pregnancy delivered effects were selected.*)

Meta-Analysis: Extraction Rules

3. When separate results were reported based on 1 versus 2 or more abortions, the results specific to one abortion were selected to enable sampling of a more homogeneous population.

4. When particular authors used the same sample and variables in more than one publication, only the most current publication was selected.

5. When the same data set was employed by different groups, both sets of results were included when distinct samples were defined.

Meta-Analysis: Final Sample composition

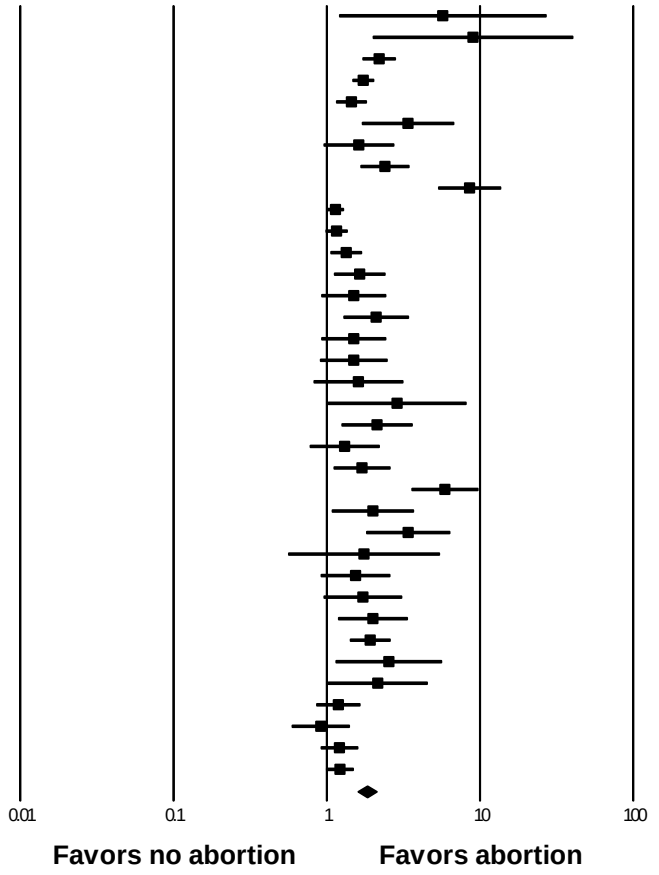
After applying the criteria and rules, the sample was comprised of 22 peer-reviewed studies (15 U.S. and 7 non-U.S.), 36 measures of effect (9 alcohol use/abuse; 5 marijuana; 7 anxiety; 11 depression; 4 suicidal behaviors), and a total of 877,297 participants, of whom 163,880 had experienced an abortion.

Meta-Analysis Results

The 1st meta-analysis, which included 36 adjusted odds ratios from the 22 studies identified, resulted in a pooled odds ratio of 1.82 (95% CI: 1.58-2.09), p<.0001. Women who have had an abortion experience an 82% higher risk for mental health problems of various forms when compared to women who have not had an abortion.

Table 2: Abortion and subsequent mental health outcomes

Study name	Upper limit	Odds ratio	Lower limit	Z-Value	p-Value
Coleman 2006 [ALCO]	27.268	5.720	1.200	2.189	0.029
Coleman 2006 [MARIJ]	40.697	9.000	1.990	2.854	0.004
Coleman, Coyle, Shuping, & Rue 2008 [ALCO]	2.834	2.198	1.705	6.073	0.000
Coleman, Coyle, Shuping, & Rue 2008 [ANX]	2.046	1.731	1.464	6.420	0.000
Coleman, Coyle, Shuping, & Rue 2008 [DEP]	1.834	1.450	1.146	3.099	0.002
Coleman, Maxey, Spence, & Nixon 2008 [ALCO]	6.810	3.390	1.688	3.430	0.001
Coleman, Reardon, & Cougle 2005 [ALCO]	2.761	1.620	0.950	1.773	0.076
Coleman, Reardon, Rue, & Cougle 2002 [ALCO]	3.474	2.396	1.652	4.609	0.000
Coleman, Reardon, Rue, & Cougle 2002 [MARIJ]	13.787	8.554	5.307	8.814	0.000
Coleman, Reardon, Rue, & Cougle 2002b [ANX]	1.300	1.140	1.000	1.958	0.050
Coleman, Reardon, Rue, & Cougle 2002b [DEP]	1.375	1.160	0.979	1.711	0.087
Cougle, Reardon, & Coleman 2005 [ANX]	1.705	1.340	1.053	2.381	0.017
Cougle, Reardon, Coleman 2003 [DEP]	2.420	1.639	1.110	2.485	0.013
Dingle, Alati, Clavarino, Najman & Williams 2008 [DEP]	2.449	1.500	0.919	1.620	0.105
Dingle, Alati, Clavarino, Najman, & Williams 2008 [ALCO]	3.446	2.100	1.280	2.937	0.003
Dingle, Alati, Clavarino, Najman, & Williams 2008 [ANX]	2.449	1.500	0.919	1.620	0.105
Dingle, Alati, Clavarino, Najman, & Williams 2008 [MARIJ]	2.500	1.500	0.900	1.556	0.120
Fergusson 2008 (suicidal ideation)	3.171	1.610	0.818	1.377	0.168
Fergusson 2008 [ALCO]	8.196	2.880	1.012	1.982	0.047
Fergusson 2008 [ANX]	3.649	2.130	1.243	2.752	0.006
Fergusson 2008 [DEP]	2.224	1.310	0.772	1.000	0.317
Gilchrist 1995 (intentional self harm)	2.614	1.700	1.106	2.418	0.016
Gissler, Hemminki, & Lonnqvist 1996 [SUIC]	9.784	5.900	3.558	6.878	0.000
Pedersen 2007 [ALCO]	3.717	2.000	1.076	2.192	0.028
Pedersen 2007 [MARIJ]	6.411	3.400	1.803	3.782	0.000
Pedersen 2008 [DEP]	5.484	1.750	0.558	0.960	0.337
Reardon & Cougle 2002 [DEP]	2.608	1.540	0.909	1.606	0.108
Reardon, Coleman, & Cougle 2004 [ALCO]	3.112	1.720	0.951	1.793	0.073
Reardon, Coleman, & Cougle 2004 [MARIJ]	3.390	2.000	1.180	2.575	0.010
Reardon, Cougle, Rue et al. 2003 [DEP]	2.623	1.924	1.411	4.140	0.000
Reardon, Ney, Scheuren, et al. 2002 [SUIC]	5.665	2.540	1.139	2.278	0.023
Rees & Sabia, 2007 [DEP]	4.573	2.150	1.011	1.988	0.047
Schmiege & Russo 2005 [DEP]	1.663	1.190	0.852	1.019	0.308
Steinberg & Russo 2008 [ANX/NCS]	1.420	0.914	0.588	-0.400	0.689
Steinberg & Russo, 2008 [ANX/NCFG]	1.609	1.210	0.910	1.310	0.190
Taft & Watson 2008 [DEP]	1.507	1.220	0.988	1.846	0.065
	2.096	1.821	1.583	8.376	0.000



Meta-Analysis Results

A 2nd meta-analysis was conducted with separate effects based on the type of outcome measure. All pooled effects were statistically significant:

- Marijuana (OR=3.30; 95% CI: 1.64-7.44, p=.001)
- Suicide behaviors (OR=2.55; 95% CI: 1.31-4.96, p=.006)
- Alcohol use/abuse (OR=2.19; 95% CI: 1.87-2.57, p<.0001)
- Depression (OR=1.37; 95% CI: 1.22-1.54, p<.0001)
- Anxiety (OR=1.35; 95% CI: 1.11-1.63, p=.002)

The level of increased risk associated with abortion varies from 35% to 230% depending on the nature of the outcome.

Table 3: Abortion and subsequent mental health outcomes organized by dependent measures

Group by Outcome	Study name	Upper limit	Odds ratio	Lower limit	Z-Value	p-Value
alcohol	Coleman 2006 [ALCO]	27.268	5.720	1.200	2.189	0.029
alcohol	Coleman, Coyle, Shuping, & Rue 2008 [ALCO]	2.834	2.198	1.705	6.073	0.000
alcohol	Coleman, Maxey, Spence, & Nixon 2008 [ALCO]	6.810	3.390	1.688	3.430	0.001
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alcohol	Coleman, Reardon, Rue, & Cougle 2002 [ALCO]	3.474	2.396	1.652	4.609	0.000
alcohol	Dingle, Alati, Clavarino, Najman, & Williams 2008 [ALCO]	3.446	2.100	1.280	2.937	0.003
alcohol	Fergusson 2008 [ALCO]	8.196	2.880	1.012	1.982	0.047
alcohol	Pedersen 2007 [ALCO]	3.717	2.000	1.076	2.192	0.028
alcohol	Reardon, Coleman, & Cougle 2004 [ALCO]	3.112	1.720	0.951	1.793	0.073
alcohol		2.576	2.195	1.871	9.642	0.000
anxiety	Coleman, Coyle, Shuping, & Rue 2008 [ANX]	2.046	1.731	1.464	6.420	0.000
anxiety	Coleman, Reardon, Rue, & Cougle 2002b [ANX]	1.300	1.140	1.000	1.958	0.050
anxiety	Cougle, Reardon, & Coleman 2005 [ANX]	1.705	1.340	1.053	2.381	0.017
anxiety	Dingle, Alati, Clavarino, Najman, & Williams 2008 [ANX]	2.449	1.500	0.919	1.620	0.105
anxiety	Fergusson 2008 [ANX]	3.649	2.130	1.243	2.752	0.006
anxiety	Steinberg & Russo 2008 [ANX/NCS]	1.420	0.914	0.588	-0.400	0.689
anxiety	Steinberg & Russo, 2008 [ANX/NCFG]	1.609	1.210	0.910	1.310	0.190
anxiety		1.634	1.352	1.119	3.125	0.002
depression	Coleman, Coyle, Shuping, & Rue 2008 [DEP]	1.834	1.450	1.146	3.099	0.002
depression	Coleman, Reardon, Rue, & Cougle 2002b [DEP]	1.375	1.160	0.979	1.711	0.087
depression	Cougle, Reardon, Coleman 2003 [DEP]	2.420	1.639	1.110	2.485	0.013
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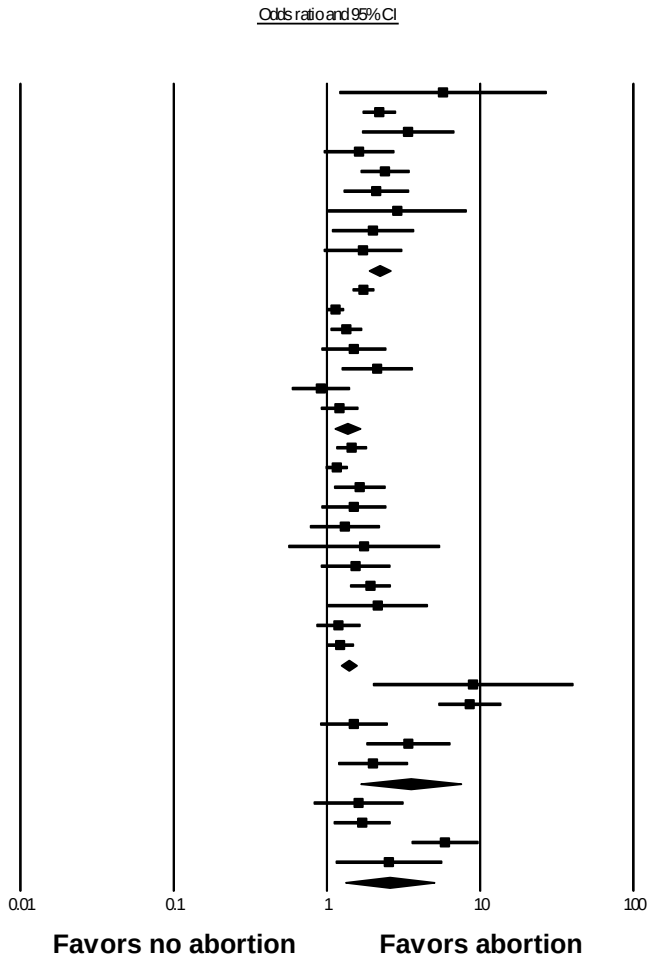
depression	Schmiege & Russo 2005 [DEP]	1.663	1.190	0.852	1.019	0.308
depression	Taft & Watson 2008 [DEP]	1.507	1.220	0.988	1.846	0.065
depression		1.548	1.379	1.229	5.449	0.000
marijuana	Coleman 2006 [MARIJ]	40.697	9.000	1.990	2.854	0.004
marijuana	Coleman, Reardon, Rue, & Cougle 2002 [MARIJ]	13.787	8.554	5.307	8.814	0.000
marijuana	Dingle, Alati, Clavarino, Najman, & Williams 2008 [MARIJ]	2.500	1.500	0.900	1.556	0.120
marijuana	Pedersen 2007 [MARIJ]	6.411	3.400	1.803	3.782	0.000
marijuana	Reardon, Coleman, & Cougle 2004 [MARIJ]	3.390	2.000	1.180	2.575	0.010
marijuana		7.441	3.503	1.649	3.261	0.001
suicide	Fergusson 2008 (suicidal ideation)	3.171	1.610	0.818	1.377	0.168
suicide	Gilchrist 1995 (intentional self harm)	2.614	1.700	1.106	2.418	0.016
suicide	Gissler, Hemminki, & Lonnqvist 1996 [SUIC]	9.784	5.900	3.558	6.878	0.000
suicide	Reardon, Ney, Scheuren, et al. 2002 [SUIC]	5.665	2.540	1.139	2.278	0.023
suicide		4.964	2.552	1.312	2.759	0.006



Meta-Analysis Results

In a 3rd meta-analysis separate pooled odds ratios were produced based on the type of group to whom women who aborted were compared. All were significant:

- No abortion: OR=1.63; 95% CI: 1.39-1.91, p<.0001
- Carried to term: OR=2.38; 95% CI: 1.62-3.50, p<.0001
- Unintended pregnancy carried to term: OR=1.55; 95% CI: 1.30-1.83,p<.0001

Regardless of the type of comparison group employed, abortion was associated with a 55% to 138% enhanced risk of mental health problems.

Table 4: Abortion and subsequent mental health outcomes organized by comparison group

Group by Control Group	Study name	Upper limit	Odds ratio	Lower limit	Z-Value	p-Value
delivery	Coleman, Maxey, Spence, & Nixon 2008 [ALCO]	6.810	3.390	1.688	3.430	0.001
delivery	Coleman, Reardon, Rue, & Cougle 2002 [ALCO]	3.474	2.396	1.652	4.609	0.000
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delivery	Reardon, Cougle, Rue et al. 2003 [DEP]	2.623	1.924	1.411	4.140	0.000
delivery	Reardon, Ney, Scheuren, et al. 2002 [SUIC]	5.665	2.540	1.139	2.278	0.023
delivery		3.502	2.386	1.626	4.443	0.000
no ab	Coleman, Coyle, Shuping, & Rue 2008 [ALCO]	2.834	2.198	1.705	6.073	0.000
no ab	Coleman, Coyle, Shuping, & Rue 2008 [ANX]	2.046	1.731	1.464	6.420	0.000
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no ab	Taft & Watson 2008 [DEP]	1.507	1.220	0.988	1.846	0.065
no ab		1.914	1.634	1.395	6.094	0.000
unintended	Coleman 2006 [ALCO]	27.268	5.720	1.200	2.189	0.029
unintended	Coleman 2006 [MARIJ]	40.697	9.000	1.990	2.854	0.004
unintended	Cougle, Reardon, & Coleman 2005 [ANX]	1.705	1.340	1.053	2.381	0.017
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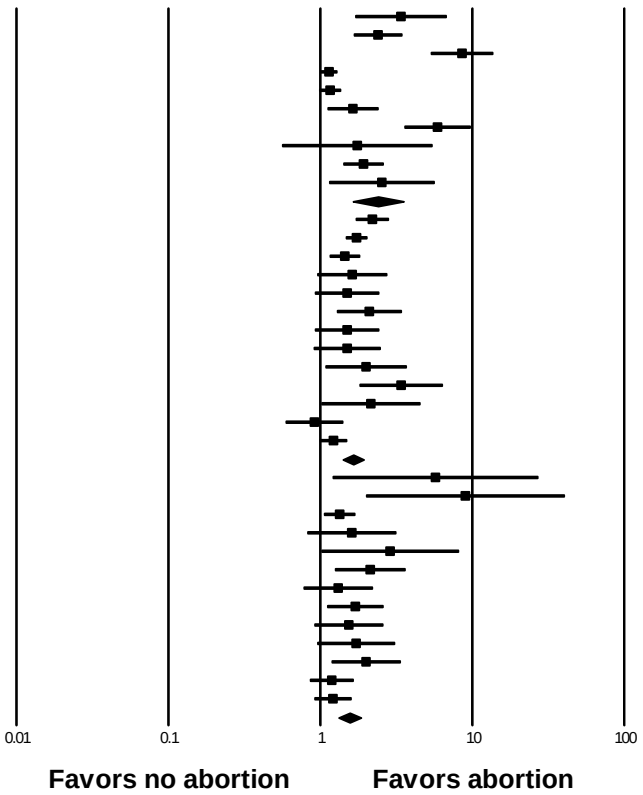
unintended	Fergusson 2008 [ANX]	3.649	2.130	1.243	2.752	0.006
unintended	Fergusson 2008 [DEP]	2.224	1.310	0.772	1.000	0.317
unintended	Gilchrist 1995 (intentional self harm)	2.614	1.700	1.106	2.418	0.016
unintended	Reardon & Cougle 2002 [DEP]	2.608	1.540	0.909	1.606	0.108
unintended	Reardon, Coleman, & Cougle 2004 [ALCO]	3.112	1.720	0.951	1.793	0.073
unintended	Reardon, Coleman, & Cougle 2004 [MARIJ]	3.390	2.000	1.180	2.575	0.010
unintended	Schmiege & Russo 2005 [DEP]	1.663	1.190	0.852	1.019	0.308
unintended	Steinberg & Russo, 2008 {ANX/NCFG]	1.609	1.210	0.910	1.310	0.190
unintended		1.836	1.551	1.309	5.082	0.000



Looking at Population Attributable Risk percentages from the pooled odds ratios:

Overall: 10% of incidence of mental health problems was found to be directly attributable to abortion.

Population Attributable Risk Percentages for Specific Outcomes

- **Anxiety: 8.30%**
- **Depression: 8.72**
- **Alcohol use: 11.5%**
- **Marijuana use: 26.5%**
- **Suicide: 34.96%**
- **All suicidal behaviors: 20.96%**

Meta-Analysis

Both the pooled odds ratios and the PAR percentages provide readily interpretable indices of the mental health consequences of abortion, offering clarity to the academic debate and to clinicians.

…the challenge now is to get the paper published…it was recently submitted to the *British Journal of Psychiatry*.

PAR with a U.S. National Sample

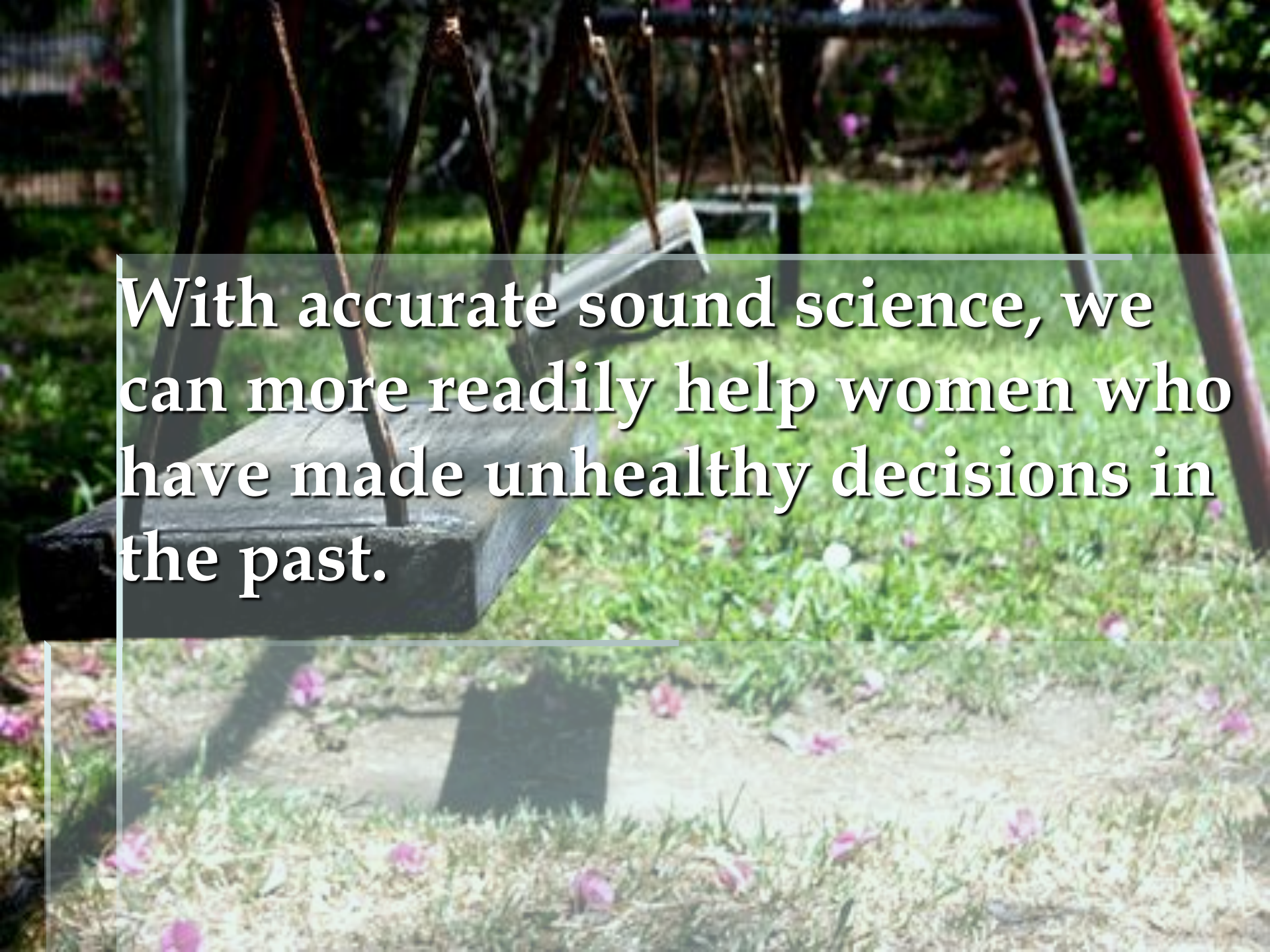
In contrast to the meta-analysis wherein mental health problems are measured in a number of different ways, if we use a nationally representative sample with data on women who meet diagnostic criteria for various disorders, we are able to derive very useful U.S. data.

Using data from a study we published earlier this year in the *Journal of Psychiatric Research* we did this and abortion was implicated in between **4.3% and 16.6% of the incidence** of a wide range of mood, anxiety, and substance use disorders.

The PAR statistic can be combined with annual mental health incidence data for women of reproductive age to determine the actual number of new cases of mental health problems that directly surface each year as a consequence of abortion.

Conclusion:

Women's post-abortion mental health problems have been well-established in the professional literature and the challenge now is to package the summary information in an accessible, credible manner in order to introduce change that is consonant with evidence-based medicine.


With accurate sound science, we can more readily help women who have made unhealthy decisions in the past.

…and we can trust more women to make life-affirming decisions in the future.

CAT