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Examining influences on women's decision to try labour after previous caesarean section

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Objective: We examined variables that may influence women's decision to try for a Vaginal Birth After Caesarean (VBAC) or an Elective Repeat Caesarean Delivery (ERCD). **Background:** After a primary caesarean delivery, many women must choose between a VBAC or an ERCD. Both options involve risk to the mother and neonate, and the decision is a complex one. **Methods:** Data were collected from 166 pregnant women and 117 intending-to-become pregnant women with one previous caesarean section. Through an online survey, women reported their birth plans (current, past and future), risk perception, influences on their decision, and their locus of control for labour and delivery. **Results:** Women planning to have a VBAC perceive a caesarean as the riskier option, while women choosing an ERCD perceive a VBAC as the riskier option. Women who plan to have a VBAC are less satisfied overall with their first birth. Women who are planning a VBAC have a higher internal locus of control for labour and delivery and a lower 'powerful others' locus of control than woman planning an ERCD. Our data suggest that women who plan to have a VBAC are more influenced by online sources and less influenced by healthcare providers, relative to women who plan an ERCD. **Conclusion:** Women's risk perception, personality, and their perception of past experience likely influence women's decision making for trying a VBAC.

Keywords: VBAC; decision making; caesarean birth; TOLAC; locus of control

Women's first birth experiences inevitably affect their future birth plans. When a woman has a caesarean delivery for her first birth, she often has a choice in any subsequent pregnancy regarding whether to undergo a trial of labour after caesarean (TOLAC) with the hopes of delivering vaginally or to elect a repeat caesarean delivery (ERCD). The results of the decision to have a TOLAC or an ERCD can have one of three outcomes.

- (1) A successful vaginal birth after caesarean (VBAC).
- (2) A TOLAC that results in a caesarean (unsuccessful VBAC).
- (3) An ERCD.

In the United States, women who have an ERCD contribute about a third of the rising number of caesarean sections, estimated to be around 32.8% in 2010

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(Martin et al., 2012) and initial data suggest a similar rate for 2011 (Hamilton, Martin, & Ventura, 2012). This rate is a 60% increase since 1996 (Martin et al., 2012). Because the cost of a caesarean section is about double that of a vaginal birth (Agency for Healthcare Research and Quality, 2012), appropriate use of caesarean sections are also a concern of US national policy. Healthy People 2020 is a US government initiative to identify nationwide health improvement priorities and to set evidence-based national objectives. The objectives for this decade include reducing caesarean births, specifically caesarean births among those with prior caesarean sections, from 90.8% (the rate of low-risk females in 2009 giving birth with a prior caesarean birth) to 81.7% (Healthy People 2020, 2012).

The reported success rates of VBACs are variable. Foureur, Ryan, Nicholl and Homer (2010), for example, reviewed VBAC guidelines from six countries published between 2004 and 2007 and found VBAC success rates with a wide range from 30% to 80%. Deline et al. (2012) recently reported a VBAC success rate of 95% among an Amish community. Foureur et al. (2010) conclude that VBAC guidelines lead to wide variability in the recommendations women receive from their doctors.

Decision-making by both healthcare providers and their patients is influenced by the risks to the mother and baby. The main risk of a TOLAC is uterine rupture, an event that can lead to fetal or maternal death. Based on data from four studies totalling 47,202 patients, the risk of uterine rupture was significantly higher for TOLAC women than ERCD women (.47% compared to .026%; Lydon-Rochelle, Holt, Easterling, & Martin, 2001). Induction of labour increases the risk of uterine rupture (risk ranges from .77% to 2.45%; Lydon-Rochelle et al., 2001). Guise et al. (2010) concluded from a meta-analysis that the combined absolute risk of maternal death associated with a TOLAC was significantly lower than an ERCD (.004% versus .013%). Guise et al. (2010) determined there was not enough evidence to conclude whether an ERCD contributed to higher maternal risk of surgery injury and haemorrhaging than a TOLAC, and there was poor evidence with no significant difference between TOLAC and ERCD women regarding maternal infection rates.

Women and their healthcare provider(s) must also consider neonatal risks. Based on a study of 76,899 women, the perinatal death rate for a TOLAC is significantly higher than for an ERCD (.13% vs. .05%); across 108,328 participants, neonatal death rates were significantly increased with TOLAC (.11%) compared to ERCD (.06%; Guise et al., 2010). Guise et al. (2010) determined there were insufficient data to evaluate the direction of risk on other variables such as sepsis, trauma, NICU admissions, neurological outcomes, and breastfeeding outcomes.

The main risks can be summarized as follows (Guise et al., 2010).

- In a group of 100,000 women of any gestational age who have a TOLAC, there will be 4 maternal deaths, 468 uterine ruptures, and 133 perinatal deaths.
- In a group of 100,000 women who have an ERCD, there will be 13 maternal deaths, 26 uterine ruptures, and 50 perinatal deaths.

Thus, the 'riskier' of the two options depends upon which outcome is prioritised.

There are additional variables that can influence the decision to have a VBAC. Avoiding a caesarean delivery means avoiding abdominal surgery, having a shorter

recovery period and a shorter hospital stay (3.9 days for an ERCD vs. 2.6 days for a VBAC; Guise et al., 2010)), and lessening infection risk and blood loss (The American College of Obstetricians and Gynaecologists, 2011). Additionally, multiple caesarean deliveries can result in adverse complications (e.g. hysterectomy, bowel or bladder injury, and problems with the placenta; The American College of Obstetricians and Gynaecologists, 2011).

Women often struggle in comprehending these risks and in receiving support in their decision-making. In their metasynthesis on women's experiences of VBACs, Lundgren, Begley, Gross and Bondas (2012) concluded that women have to 'grope through a fog' of information and emotions as they make their decision. Women often report considerable pressure from healthcare providers to not choose a TOLAC (Lundgren et al., 2012) and a recent study suggests that doctors may not be sufficiently informing women about the risks and consequences of the decision to undergo a TOLAC (Bernstein, Matalon-Grazi, & Rosenn, 2012). Many women also report that they are not supported by health professionals when they want to have a vaginal birth (Lundgren et al., 2012).

Various psychosocial variables, such as memories, desires and perceptions, can influence women's decisions. Women motivated to have a vaginal birth often express a desire to bond with the baby immediately after delivery, commonly a challenge after a caesarean section (Lundgren et al., 2012). Many women attempt a vaginal birth so they can experience childbirth naturally or in the hopes of increased partner involvement (Emmett, Shaw, Montgomery, & Murphy, 2006; Kaimal & Kuppermann, 2012). Eden, Hashima, Osterweil, Nygren and Guise (2004) reviewed evidence from multiple studies and found that the most commonly cited reason for choosing to TOLAC was ease of recovery to care for other children, as well as the desire to experience a vaginal birth. Fear of childbirth has been reported as a driving factor for women to choose an elective caesarean (McCourt et al., 2007).

There is insufficient research on the psychological variables influencing women's decisions to try for a VBAC. The studies conducted often have small sample sizes and rarely collect data from women before they have experienced the outcome of their decision. By examining the decision independent of the outcome, women's recollections and emotions are not influenced by the result of their experience (see Elywn & Miron-Shatz (2010) for more on the importance of looking at decisions independent of outcome). In this study, we seek to examine differences between women who are making a decision to ERCD versus women who are making a decision to TOLAC. We hypothesise that differences along four dimensions are related to specific aspects of decision-making.

- (1) Perception of risk: there is no standard way to communicate risk, and different doctors or healthcare providers can leave different impressions on women (Lundgren et al., 2012; McGrath, Phillips, & Vaughan, 2010). We hypothesise that women who choose to TOLAC perceive a VBAC as less risky, whereas women who choose an ERCD perceive that as the less-risky option.
- (2) Memory of first caesarean delivery: when people make decisions, they often rely more on stories and anecdotes, including their own memories, than statistics and facts (Kaimal & Kuppermann, 2010; Nisbett & Ross, 1980). Women who underwent caesarean births often remember their experience as

traumatic, citing feelings of loss of control, unmet expectations of the birth process, and separation from the baby (Fenwick, Gamble, & Mawson, 2003). For many women, their negative experience strengthens their desire to have a vaginal birth (Lundgren et al., 2012). We hypothesise that women who choose to have a TOLAC have a more negative memory of their first caesarean birth than do women planning an ERCD.

- (3) Locus of control: women differ in terms of how much influence they believe they have on their birth experience, their so-called 'locus of control'. When a person believes that chance plays a dominant role in determining the outcomes of events, the person is said to hold an external locus of control. However, when a person believes their own actions primarily determine outcomes, that person holds an internal locus of control. There is reason to believe that locus of control, as related to health variables, may influence decision-making. In one study, for example, having a higher external locus of control predicted a lower preference for involvement in medical decision making for patients between the ages of 18 and 31 (Schneider et al., 2006). Dilks and Beal (1997) found that a related construct, self-efficacy (belief in a woman's own ability), is higher for women who choose a TOLAC. In a descriptive and qualitative study, Ridley, Davis, Bright and Sinclair (2006) additionally highlight a woman's sense of control in the decision-making process as a dominant theme in women who choose a TOLAC. To date, we have not seen a study relating locus of control for labour and delivery with decision-making as related to choosing a TOLAC. We predict that women who choose a TOLAC have a greater internal locus of control than women planning an ERCD.
- (4) Sources of information that women use in making decisions: because women who choose a TOLAC often report feeling less support from their doctor (Lundgren et al., 2012) than ERCD women, we believe that TOLAC women rely less on doctors as sources of information. TOLAC women, then, may be more likely to seek information from other sources.

Method

Participants

Women were recruited online via social networks on Facebook.com, Cafemom.com, meetup.com, a post on VBAC.com, and through advertisements in doctors' offices in the New York Hudson Valley region. We assume that most of our participants are from the United States. Women were directed by a link to a Google survey. To qualify, women's first birth must have been a caesarean section. Many women who had answered had already given birth to their second; however, for the purpose of our analyses, we only analysed women who were currently pregnant ($N = 166$) or planning on being pregnant ($N = 117$). Of the women, 215 were categorised as planning a TOLAC, 20 were planning an ERCD and 48 were Undecided (total $N = 283$) (refer to Table 1 for the breakdown of women in each category). We only report data from these women, as they have not yet experienced the outcome of their birth; in this way, their recollections are not influenced by the outcome. We excluded women whose answers were unclear ($N = 11$).

Table 1. Number of women in study grouped according to decision.

	TOLAC	ERCDC	Undecided
Planning on pregnancy ($N = 117$)	84	9	24
Pregnant ($N = 166$)	131	11	24
Total ($N = 283$)	($N = 215$)	($N = 20$)	($N = 48$)

Materials

Survey questions included women's birth plans for their current, past, and future pregnancies, the outcomes of past pregnancies, their opinions on their previous outcomes (birth satisfaction and who or what they mostly believe is responsible for the outcome), risk perception concerning VBACs and ERCDCs, influences on their birth plans (including a checklist in which they identify what or who has influenced their birth plan for the future and the one variable/person who was most influential), and whether the participant has heard and been influenced by others' birth stories.¹

The Multidimensional Health Locus of Control Scales for Labor and Delivery (Stevens, Hamilton, & Wallston, 2011) was also included. This scale measures three different dimensions of locus of control: the extent to which women believe they themselves control events ('internal locus of control'), the extent to which women believe other people in positions of power control events ('powerful others' locus of control'), and the extent to which events are determined by chance ('chance locus of control'). Internal locus of control is indicated to the extent that women agree with statements like 'I am directly responsible for my labor and delivery going well or poorly'. Powerful others locus of control is measured in terms of agreement with statements like 'Following doctor's orders to the letter is the best way to keep my labor and delivery from going poorly'. Chance locus of control is indicated by agreement with statements like 'Luck plays a big part in determining how well my labor and delivery go'. The authors report the acceptable internal reliabilities for all three subscales (Internal $\alpha = .75$, Chance $\alpha = .77$, and Powerful Others $\alpha = .71$). Our own data show similar internal reliabilities (Internal $\alpha = .74$, Chance $\alpha = .71$, and Powerful Others $\alpha = .73$). The authors report the following correlations between subscales: Chance and Internal = .02, n.s.; Powerful Others and Internal = $-.37$, $p < .001$; and Powerful Others and Chance = .38, $p < .001$. Our own data also provide validity for three different subscales (Chance and Internal = $-.20$, $p = .001$; Powerful Others and Internal = $-.37$, $p < .001$; and Powerful Others and Chance = .34, $p < .001$). Construct validity for these subscales is also supported by results that demonstrate that women who scored higher on the Internal subscale were more likely to choose a non-traditional healthcare provider and to give birth outside of a hospital; women who scored higher on Powerful Others subscale were more likely to choose an obstetrician and hospital birth (Stevens et al., 2011).

The total survey, of up to 46 questions, was pre-tested for clarity by three women who had given birth and had caesareans. The survey, approved by Mount Saint Mary College Institutional Review Board, required participants to give their informed consent electronically (by checking a box) before they could begin. Recruitment lasted approximately two months. Results from 283 women who had had caesarean sections and were currently or planning on being pregnant in the future were analysed.

Results

To compare means on variables among women who were undecided, choosing a TOLAC, and choosing an ERCD, one-way ANOVAs were run and Gabriel's pair-wise comparison test was used for post-hoc analyses because of the sample size differences. The Welch one-way ANOVA test was also applied to the analysis, as it does not require homogeneity of variance. The results produced by the Welch test yielded the same outcome, indicating that our conclusions are not sensitive to heterogeneity in the variances.

See Table 2 for mean responses and standard deviations. ERCD and Undecided women differed significantly from TOLAC women on 7 of the 8 specific items, and on two of the locus of control scales, as shown in Table 2. Not surprisingly, compared to ERCD women, TOLAC women perceive an ERCD as more risky; compared to TOLAC women, ERCD women perceive a VBAC as more risky. The Undecided women fall in the middle. Particularly noteworthy is that TOLAC women are less satisfied with their first birth and that they perceive more failure on the part of themselves, their body, and their healthcare providers. TOLAC women

Table 2. Comparison of means (and standard deviations) as a function of women's birth choice.

	TOLAC (<i>N</i> = 213) <i>M</i> (<i>SD</i>)	ERCD (<i>N</i> = 20) <i>M</i> (<i>SD</i>)	UNDECIDED (<i>N</i> = 48) <i>M</i> (<i>SD</i>)	<i>p</i> -values
Risk of VBAC (1, <i>low risk</i> ; 5, <i>high risk</i>)	2.48 ^a (.80)	3.80 ^b (.95)	3.19 ^c (.87)	< .001
Risk of ERCD (1, <i>low risk</i> ; 5, <i>high risk</i>)	3.71 ^a (.97)	2.70 ^b (.92)	3.02 ^b (.79)	< .001
Satisfaction with first birth (1, <i>agree</i> ; 5, <i>disagree</i>)	4.00 ^a (1.22)	2.50 ^b (1.74)	3.19 (1.33)	< .001
'In my first birth, I had no control and my situation determined the outcome' (1, <i>agree</i> ; 5, <i>disagree</i>)	1.83 ^a (1.14)	3.25 ^b (1.71)	2.31 ^c (1.39)	< .001
'I felt like my body had failed in some way' (1, <i>agree</i> ; 5, <i>disagree</i>)	2.15 ^a (1.44)	4.20 ^b (1.15)	2.73 ^c (1.55)	< .001
'I felt like my health providers or the hospital staff had failed me in some way' (1, <i>agree</i> ; 5, <i>disagree</i>)	2.43 ^a (1.55)	4.40 ^b (.94)	3.38 ^c (1.45)	< .001
'I felt like my body was never meant to give birth vaginally' (1, <i>agree</i> ; 5, <i>disagree</i>)	4.33 (1.19)	4.35 (1.27)	4.31 (1.04)	= .993
'Internal' locus of control (1, <i>low</i> ; 5, <i>high</i>)	3.56 ^a (1.00)	2.99 ^b (.96)	2.96 ^b (.90)	< .001
'Powerful others' locus of control (1, <i>low</i> ; 5, <i>high</i>)	2.98 ^a (1.01)	3.83 ^b (1.03)	3.49 ^b (1.08)	< .001
'Chance' locus of control (1, <i>low</i> ; 5, <i>high</i>)	3.20 (1.12)	3.38 (1.04)	3.45 (1.13)	= .32

^{a,b,c}Across a row, means with different superscripts differ at less than .05 level according to Gabriel's post-hoc test.

have a higher internal locus of control for childbirth and a lower powerful others locus of control for childbirth than Undecided or ERCD women.

We asked women to choose from a list of sources that influenced their future birth plan; Chi-square goodness of fit tests were used to assess whether the proportion of women using each source of influence differs as a function of their birth choice. Three times as many TOLAC women used online sources compared to ERCD women [$\chi^2(2) = 12.78, p < .01$]. TOLAC women were more likely to be influenced by a support group [$\chi^2(2) = 15.48, p < .001$], and less likely to rely on a healthcare provider [63% vs. 80%; $\chi^2(2) = 8.84, p < .01$]. Table 3 presents the breakdown of woman in each category. We subsequently asked women to choose their *single* most influential source of information that they used in making their decision. More TOLAC women listed doulas, online information, support groups, and educational experience as influential, whereas more ERCD women identified their husband/partner/significant other and their health providers, but no significant results were found using a Chi-square test of independence [$\chi^2(14) = 20.02, n.s.$; refer to Table 4].

Table 3. Number of women (%) who identified each factor as an influence on their birth plan.

	TOLAC (<i>N</i> = 214) Total (%)	ERCD (<i>N</i> = 20) Total (%)	UNDECIDED (<i>N</i> = 48) Total (%)	χ^2	<i>p</i> -value
Husband/partner/ significant other	174 (81%)	18 (90%)	44 (92%)	$\chi^2(2) = 3.71$	0.16
Health provider	135 (63%)	16 (80%)	40 (83%)	$\chi^2(2) = 8.84$	0.01
Family/friends	80 (37%)	4 (20%)	18 (38%)	$\chi^2(2) = 2.44$	0.30
Doula	49 (23%)	1 (5%)	2 (4%)	$\chi^2(2) = 11.73$	0.003
Online information	130 (61%)	4 (20%)	25 (52%)	$\chi^2(2) = 12.78$	0.002
Support groups	65 (30%)	0 (0%)	5 (10%)	$\chi^2(2) = 15.48$	0.001
Educational experience	59 (28%)	4 (20%)	6 (13%)	$\chi^2(2) = 5.05$	0.08
Other	26 (12%)	2 (10%)	1 (2%)	$\chi^2(50) = 40.14$	0.84

Table 4. Number of women (%) who identify factor as the primary influence on their birth plan.

	TOLAC (<i>N</i> = 213) Total (%)	ERCD (<i>N</i> = 20) Total (%)	UNDECIDED (<i>N</i> = 48) Total (%)
Husband/partner/significant other	62 (29%)	8 (40%)	14 (29%)
Health provider	48 (22%)	9 (45%)	20 (42%)
Family/friends	9 (4%)	1 (5%)	3 (6%)
Doula	6 (3%)	0	1 (2%)
Online information	31 (15%)	1 (5%)	6 (13%)
Support groups	10 (5%)	0	1 (2%)
Educational experience	24 (11%)	0	2 (4%)
Other	23 (11%)	1 (5%)	1 (2%)

$\chi^2(14) = 20.02, p = .13$ (ns).

Discussion

As predicted by our first hypothesis, we found TOLAC women believe a caesarean is riskier, while ERCD women believe attempting a VBAC is riskier (and Undecided women's mean responses were between the two groups). Consistent with our second hypothesis, TOLAC women report less satisfaction overall with their first birth experience, and blame the situation, their body and their healthcare providers more for the outcome than ERCD women. TOLAC women seem to desire more control of the situation.

Consistent with these results and as predicted by our third hypothesis, TOLAC women had a higher internal locus of control than women who chose an ERCD. Women who are choosing a TOLAC score lower on locus of control of 'powerful others' than women choosing an ERCD. Again, this means TOLAC women are less likely to believe a healthcare provider will direct a successful outcome and more likely to believe that they have control over the outcome of their birth. This is consistent with observations from Ridley et al. (2006) that a sense of control was important for women who had a VBAC. It is possible that women who choose to have a TOLAC have a higher internal locus of control to begin with, and based on this, are choosing to have a TOLAC. Conversely, much of the support for women who have a TOLAC (e.g. books, online forums, doulas) emphasises that a woman can control her own body. This kind of influence on a woman choosing to TOLAC might increase her internal locus of control.

Relevant to our fourth hypothesis, women who choose TOLAC are more likely to use online sources, be influenced by support groups, and are less likely to rely on a healthcare provider for their decision-making. Pregnant women, in general, often turn to the Internet for information, empowerment, to share experiences, and for assisted decision-making (Lagan, Sinclair, & Kernohan, 2011). In our study, 15% of women who are planning to TOLAC identified the Internet as their *primary* source of influence for their decision. The influence of the Internet on TOLAC women's birth plans is consistent with research from Romano, Gerber and Andrews (2010), who highlight the power of social media on women's decision to choose a VBAC. Websites, blogs and discussion forums, such as vba.com and ICAN, are cited as being able to provide information quickly, and allow women to share their own stories.

Healthcare providers were 2–3 times more likely to be listed as the primary influence on birth plan for ERCD women than TOLAC women. However, this must be interpreted with caution. Perhaps ERCD women rely more heavily on their healthcare provider because they have a situation which is more likely to require a repeat caesarean (their births are more risky). In the future, more screening needs to take place to ensure that the ERCD women being compared are not in a higher risk category in their pregnancy than TOLAC women.

Whoever or whatever influences a woman can also act as a primary source of information, and thus manipulate her perceptions of risk. A next step might explore whether, to what extent and how sources of information are, in fact, contributing to the perceptions of risk. We know that framing effects, in which people react differently to a particular choice depending on whether it is presented as a loss or a gain, are considered to be some of the most reliable cognitive biases in human decision making (Galotti, 2002; Kahneman & Tversky, 2000; Tversky & Kahneman, 1981). This suggests, in turn, that the specific way information is presented to women

may dramatically change their preference for either an ERCD or a TOLAC. Further work is needed to confirm this possibility, however.

One ERCD woman in our survey reported that she felt she did not have a choice for her birth (she cites her doctor's policy). Her response suggests a potential methodological problem. Some women are in positions where they do not have or do not perceive themselves to have the liberty to make their own choice. Whether women have or perceive they have options should be measured in the future. It is challenging to determine whether this woman or others in her position have another feasible option (many TOLAC women have to put in substantial effort to find supportive healthcare providers), or whether there was truly no other option in the area.

This study is only preliminary in its examination of the different influences on women's decision to undergo a trial of labour after birth. In the next phase of research, we plan to recruit more ERCD women, only survey pregnant women, examine the accuracy of their risk perception, and include additional personality variables, including the Big Five.

As healthcare today is increasingly involving patients in decision-making, it is important to understand influential variables in patients' decision-making process. This study suggests that risk perception, locus of control, past birth experiences and informational sources, including the Internet, may predict women's choices and influence their decision when choosing a TOLAC or ERCD. Researchers need to address how healthcare providers can assist women through this decision as many dimensions can have an impact on their decision-making processes.

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Note

1. The complete survey is available from the first author upon request.

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