10-1-2011

Women's Perceptions of Caesarean Birth: A Roy International Study

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Abstract

The purpose of this Roy adaptation model-based multi-site international mixed method study was to examine the relations of type of caesarean birth (unplanned/planned), number of caesarean births (primary/repeat), and preparation for caesarean birth to women's perceptions of and responses to caesarean birth. The sample included 488 women from the United States (*n* = 253), Finland (*n* = 213), and Australia (*n* = 22). Path analysis revealed direct effects for type of and preparation for caesarean birth on responses to caesarean birth, and an indirect effect for preparation on responses to caesarean birth through perception of birth the experience.

The purpose of this Roy adaptation model-based multi-site international mixed method study was to examine the relations of type of caesarean birth (unplanned or planned), number of caesarean births (primary or repeat), and preparation for caesarean birth to women's perceptions of and responses to caesarean birth. The study is a replication and extension of a program of research about women's adaptation to caesarean birth that began in the late 1970s (Fawcett, 1981; Fawcett & Burritt, 1985; Fawcett, Pollio, & Tully, 1992; Fawcett & Weiss, 1993; Reichert, Baron, & Fawcett, 1993), and was designed specifically to extend knowledge of women's experiences of caesarean birth across countries. The multi-site international study was conducted between 2000 and 2006 in four states of the United States—Massachusetts, Oklahoma, Virginia, and Wisconsin—and two other countries—Finland and Australia (Fawcett et al., 2005).

Interest in women's adaptation to caesarean birth was at a peak in 1988, when the caesarean birth rate in the United States reached a then all-time high of 24.7% of births (Clark & Taffel, 1995). Despite many efforts, the Healthy People 2000 objective of reducing the caesarean birth rate to 15% was not achieved. Indeed, although

the caesarean birth rate in the United States declined throughout the early and mid-1990s, to a low of 20.7% in 1996, the rate then steadily increased each year to 31.8% of births by 2007, a 50% increase since 1996 (Hamilton, Martin, & Ventura, 2009). The caesarean birth rate in Australia also has increased, from 19.5% in 1996 to 30.8% in 2006 (Laws, Abeywardana, Walker, & Sullivan, 2007; Laws & Hilder, 2008). In contrast, the caesarean birth rate in Finland has remained almost constant, from 16% in 1996 to 16.3% in 2006; the highest rate during that decade was 16.8% in 2001 (National Institute for Health and Welfare, 2007; Vuoir & Gissler, 2008).

Reductions in the caesarean birth rate in the 1990s were accomplished through changes in physicians' behaviors (Main, 1999) and physicians' and women's willingness to attempt a vaginal birth after a previous caesarean birth (VBAC). However, during the past several years, the VBAC rate has dropped precipitously due to such serious complications as uterine rupture, and the caesarean birth rate has risen proportionately (Hamilton, Martin, Ventura, Sutton, & Menacker, 2005; Sadan, Leshno, Gottreich, Golan, & Lurie, 2007). Nurses can encourage physicians to change their behaviors and support behavioral changes, and they also can implement nursing interventions that are associated with lower caesarean birth rates (Radin, Harmon, & Hanson, 1993). More to the point of this study is that nurses can help women adapt to the caesarean birth experience if they first understand the women's perceptions and responses. Once those perceptions of and responses to caesarean birth are understood, nursing interventions can be designed to facilitate optimal adaptation.

Conceptual Model

The study was guided by the Roy adaptation model (RAM) (Roy, 2009; Roy & Andrews, 1999). This conceptual model of nursing depicts the individual as an adaptive system who interacts with constantly changing environmental focal and contextual stimuli. The focal stimulus is the one most immediately confronting the person. The contextual stimuli are all other stimuli that contribute directly to adaptation. For the purposes of the present study, the adaptive system encompassed women from three countries who experienced caesarean birth. The focal stimulus was the type of caesarean birth—planned or unplanned—and the contextual stimuli were number of caesarean births—primary or repeat—and preparation for caesarean birth; relevant data were recorded on an investigator-developed *Background Data Sheet*.

According to the RAM, individuals respond to stimuli through regulator and cognator coping processes. The regulator subsystem encompasses basic neural, chemical, and endocrine channels that process stimuli in an automatic, unconscious manner. This subsystem was not considered in this study. The cognator subsystem encompasses four cognitive-emotive channels for stimulus processing: perceptual/information processing, learning, judgment, and emotion. In this study, the cognator subsystem was represented by perception of the birth experience, defined as feelings about labor or preoperative procedures, delivery, and initial contact with the infant, and measured by the *Perception of Birth Experience Scale* (POBES) (Cranley, Hedahl, & Pegg, 1983; Marut & Mercer, 1979).

The decision to regard perception of the birth experience as representing the cognator subsystem was made on the basis of the findings of a factor analytic study of the POBES (Fawcett & Knauth, 1996). The results of that study revealed that contrary to the researchers' expectations, the POBES items did not cluster into four factors representing the four RAM modes of adaptation (physiological, self-concept, role function, interdependence). Rather, the data suggested that the POBES is a measure of perception within the context of the RAM cognator subsystem.

The RAM proposes that regulator and cognator coping processes are manifested in adaptation responses, which are classified in four modes. The physiological mode emphasizes maintenance of the physiological integrity of the adaptive system and encompasses oxygenation, nutrition, elimination, activity and rest, immune processes and the integument, the senses, fluids and electrolytes, neurological function, and endocrine function. The self-concept mode focuses on psychic integrity and deals with perception of the physical self in terms of body image and body sensation, as well as perception of the personal self, including self- consistency, self-ideal, and the moral-ethical-spiritual self. The role function mode deals with social integrity by focusing on performance of activities associated with the various roles one enacts throughout life. The interdependence mode also deals with social integrity and emphasizes behaviors underlying the development and maintenance of satisfying affectional relationships with significant others, as well as the provision and receipt of social support. The four modes of adaptation were collectively represented in this study by women's responses to the events surrounding caesarean childbirth, as measured by the *Caesarean Birth Experience Questionnaire* (Fawcett, 1981). The conceptual-theoretical-empirical structure for the study is illustrated in Figure 1.
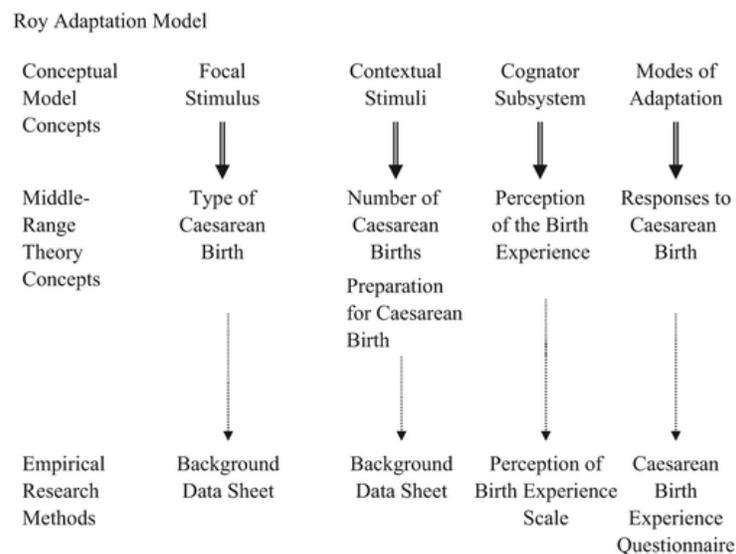
Roy Adaptation Model

Conceptual Model Concepts	Focal Stimulus	Contextual Stimuli	Cognator Subsystem	Modes of Adaptation
↓	↓	↓	↓	
Middle-Range Theory Concepts	Type of Caesarean Birth	Number of Caesarean Births	Perception of the Birth Experience	Responses to Caesarean Birth
		Preparation for Caesarean Birth		
⋮	⋮	⋮	⋮	
Empirical Research Methods	Background Data Sheet	Background Data Sheet	Perception of Birth Experience Scale	Caesarean Birth Experience Questionnaire

Figure 1. Conceptual-theoretical-empirical structure for study of perceptions of and responses to caesarean birth.

Theory of Perceptions of and Responses to Caesarean Birth

A middle-range theory of perceptions of and responses to caesarean birth, which was tested in this study, was derived from the propositions of the RAM that are illustrated in Figure 2. The propositions of the theory, illustrated in Figure 3, reflect the direct and indirect effects of a path diagram (Norris, 2005). The RAM proposition that stimuli are related to coping processes led to theory proposition A—depicted in path 1a—that of type of caesarean birth (representing the focal stimulus) and propositions B and C—depicted in paths 1b and 1c, respectively—that number of caesarean births and preparation for caesarean birth (representing the contextual stimuli) are directly related to perception of the birth experience (representing the cognator subsystem). The RAM proposition that the coping processes are related to the modes of adaptation led to theory proposition D—depicted in path 2—that perception of the birth experience is directly related to responses to caesarean birth (representing the modes of adaptation). In addition, a proposition asserting that stimuli are directly related to the modes of adaptation (Fawcett, 2003) led to theory propositions E, F, and G—

depicted in paths 3a, 3b, and 3c, respectively—that type of caesarean birth, number of caesarean births, and preparation for caesarean birth are directly related to responses to caesarean birth. The RAM proposition that stimuli are indirectly related to modes of adaptation through coping processes led to theory propositions H, I, and J that type of caesarean birth, number of caesarean births, and preparation for caesarean birth are indirectly related to responses to caesarean birth through perception of the birth experience (paths 1a, 1b, 1c, 2).
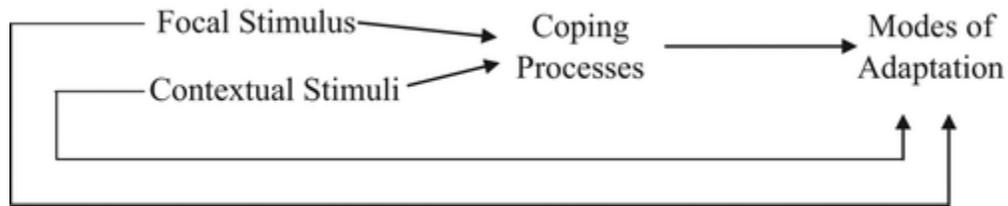

Figure 2. Relations between Roy adaptation model concepts.

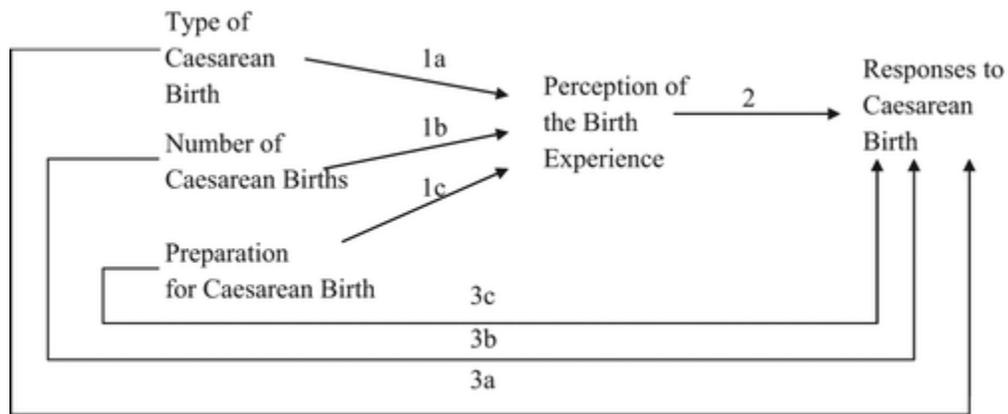Note. Arrow-headed lines depict propositions.

Figure 3. Path diagram of the relations between the middle-range theory concepts before testing.

Related Literature

Type of Caesarean Birth

The literature supports the designation of type of caesarean birth—unplanned or planned—as a major influence on the woman's perceptions of and responses to the caesarean birth. Researchers who conducted studies in the late 1970s and early 1980s found that women who had unplanned caesarean deliveries reported more negative perceptions of the birth experience (Cranley et al., 1983; Marut & Mercer, 1979) and many more negative responses to caesarean birth (Fawcett, 1981; Fawcett & Burritt, 1985) than those who had planned caesarean deliveries. In contrast, the findings of later studies revealed no difference in perception of the birth experience for women who had unplanned or planned caesarean deliveries (Fawcett et al., 1992) and fewer negative responses (Reichert et al., 1993). Shearer (1989) speculated that as the caesarean birth rate increased throughout the 1980s, women began to regard caesarean delivery as a normal experience and, therefore, were not as distressed as women had been when caesarean delivery was not as common.

Number of Caesarean Births

The context in which caesarean birth occurs includes the number of times a woman has had a caesarean birth, which can be categorized as the first (primary) or a second or subsequent (repeat) caesarean. No published studies of comparisons of perceptions of or responses to caesarean birth of women who had a primary caesarean birth and those who had a repeat caesarean birth could be located. It is possible that a previous caesarean influences perceptions and responses, such that women who have a repeat caesarean may have more positive perceptions and responses to the birth. Furthermore, given the potential overlap between planned and unplanned caesarean birth and primary and repeat caesarean birth–such that some women who have planned caesareans are more likely to have a repeat caesarean than their counterparts who had unplanned caesareans—the interaction of unplanned/planned and primary/repeat caesarean birth warrants study.

Preparation for Caesarean Birth

The context in which caesarean birth occurs also includes whether the woman felt prepared for the experience. No published studies of comparisons of women who did and did not feel prepared for the caesarean birth could be located. Perhaps women who felt prepared have more positive perceptions and responses than do women who did not feel prepared for the caesarean birth. Moreover, the interaction of unplanned/planned caesarean birth and felt prepared/did not feel prepared for the caesarean birth warrants examination, given that women who have a planned caesarean birth may feel more prepared than those who have an unplanned caesarean.

Methodology

Design

A mixed procedure quantitative and qualitative design was used for this correlational study. The theory of perceptions of and responses to caesarean birth was tested by path analysis.

Sample

The sample of 488 women who had a caesarean birth was recruited from the postpartum units of urban hospitals in the United States (*n* = 253), Finland (*n* = 213), and Australia (*n* = 22). The United States subsample included 33 women from Massachusetts, 91 from Oklahoma, 30 from Virginia, and 99 from Wisconsin. Inclusion criteria were at least 18 years of age and English speaking for the United States and Australian subsamples and Finnish speaking for the Finnish subsample. Power analysis indicated that a sample of 92 participants was sufficient for multiple regression analysis with five independent variables, a medium effect size (f^2 = .15), power of .80, and α = .05 (Cohen, 1988). The demographic and perinatal characteristics of the women are given in Table 1.

Table 1. Demographic and Perinatal Characteristics of the Sample by Country (N = 488)

Characteristic	United States (n = 253)	Finland (n = 213)	Australia (n = 22)
Age in years (M (SD) Range)	28.9 (6.2)	31.8 (5.3)	30.5 (4.0)
	18-45	18-44	23-38
College education (n, %)	141 (56%)	84 (39%)	6 (32%)
Occupation (n, %)			
Services and sales	83 (33%)	124 (58%)	6 (27%)
Professional	78 (31%)	83 (39%)	10 (45%)
Homemaker	73 (29%)		2 (9%)
Student	10 (4%)		1 (5%)
Not reported	9 (3%)	6 (3%)	3 (14%)
Residence (n, %)			
City	176 (70%)	178 (83%)	
Suburb	56 (22%)	34 (16%)	16 (73%)
Rural	18 (7%)		1 (4%)
Not reported	3 (1%)	1 (0.5%)	5 (23%)
Parity (n, %)			
Primipara	99 (39%)	108 (51%)	13 (59%)
Mulitpara	154 (61%)	105 (49%)	9 (41%)
Type Anesthesia for Delivery (n, %)			
Regional	233 (92%)	165 (77%)	21 (95%)
General	19 (7%)	7 (3%)	
Not reported	1 (0.4%)	41 (19%)	1 (5%)
Attended Childbirth Education Classes (n, %)	70 (28%)	106 (50%)	9 (41%)
Received Caesarean Birth Information (n, %)	52 (21%)	66 (31%)	7 (32%)

One way analysis of variance (ANOVA) revealed a statistically significant difference in the ages of the women from different countries, $F(2, 485) = 14.02$, $p < .001$. The Scheffé multiple comparison procedure indicated that the Finnish women were slightly older than those from United States ($p < .05$) but not older than the Australian women, and that the women from the United States and Australia did not differ in age.

Categories for race and ethnicity differed across the countries. All women in the Finnish subsample were categorized as Finnish. All but one woman in the Australian subsample were categorized as Australian born; the other woman, as a Pacific Islander. The United States subsample included 138 (55%) women who were categorized as White non-Hispanic; 75 (30%), as Black; 21 (8%), as Hispanic; 7 (3%), as American Indian; 6 (2%), as Asian; 1 (0.4%), as a Pacific Islander, and 5 (2%), as unknown.

Almost one-half of all women had at least some college education ($n = 231$, 47%); due to differences in educational systems across countries, comparisons of frequencies for levels of education were not possible. Slightly more than two-fifths of all women were employed in service or sales occupations ($n = 213$, 44%), and slightly more than one-third were employed in professional occupations ($n = 171$, 35%); of note, none of the Finnish women were homemakers or students. The majority of women from the United States and Finland lived in cities; in contrast, the majority of women from Australia lived in suburbs.

More than one-half of the women were multiparas ($n = 268$, 55%). The United States subsample included a greater percentage of multiparas than primiparas, whereas the Finnish and Australian subsamples included greater percentages of primiparas, $\chi^2(2, N = 488) = 8.083$, $p = .018$. The vast majority of all women received regional anesthesia for delivery ($n = 419$, 86%). Not quite two-fifths of the women attended childbirth education classes ($n = 185$, 38%), and only one-quarter of all women reported that they had received information about caesarean birth from any source, including childbirth educators, physicians, nurses, family members, or friends ($n = 125$, 26%).

Instruments

The POBES ([Marut & Mercer, 1979](#)) was used to measure the women's perceptions of the birth experience. The POBES was modified by Cranley and colleagues (1983) for women having planned caesarean deliveries. The

unplanned caesarean birth version of the POBES (Form A) contains 29 items about labor, delivery, and initial contact with the infant, and the planned caesarean birth version of the POBES (Form B) contains 28 similar items. Items on both forms are rated on a scale of 1 to 5, ranging from "not at all" to "extremely." A mean score is computed for each woman, with a possible score range of 1 to 5, to account for the difference in the number of items on Forms A and B. Higher scores indicate more positive feelings about the birth experience. Content validity was established through a review of literature, including studies of women's feelings about their childbirth experiences (Marut & Mercer, 1979). Cronbach's alpha internal consistency reliability coefficients for Form A range from .83 to .87 (Fawcett et al., 1992; Mercer, Hackley, & Bostrom, 1983). Cronbach's alpha coefficients for Form B range from .84 to .91 (Cranley et al., 1983; Fawcett et al., 1992). Cronbach's alpha was .77 for Form A and .76 for Form B for this study sample.

The *Caesarean Birth Experience Questionnaire* (CBEQ) was used to measure the women's responses to caesarean birth. The CBEQ, which was developed by Fawcett (1981), consists of five open-ended questions asking the woman how she felt physically and emotionally when she found out she was to have a caesarean birth, during the delivery, and after the baby was born; her greatest needs during the caesarean birth experience; and what could have been done and by whom to improve the experience. Content analysis was used to identify and categorize the women's responses to the CBEQ items (Fawcett, 2006). The unit of analysis was the word, phrase, or sentence that expressed a response. The responses were categorized according to the four RAM modes of adaptation (physiological, self-concept, role function, interdependence). An "other" category was available for any response that did not reflect one of the four modes of adaptation. The responses in each mode were further categorized as adaptive or ineffective. Responses were judged to be adaptive—or positive—when the woman's goals related to caesarean birth were achieved. Responses were considered ineffective—or negative–when the woman's goals were not achieved. Ineffective responses do not, however, always reflect inappropriate goals or behaviors. Rather, those responses may be appropriate for the situation but signal a need for nursing intervention. Interrater reliability between two independent coders ranges between 82% and 84.3% (Reichert et al., 1993; Silva, 2001).

Each woman's responses to the CBEQ were summed to yield an adaptive responses score and an ineffective responses score for each of the five questions. The adaptive and ineffective responses scores for the five questions then were separately summed, yielding a total adaptive responses score and a total ineffective responses score; those total adaptive responses and ineffective responses scores were summed to yield a total responses score. An adaptation score was calculated by dividing the total adaptive responses score by the total responses score and multiplying by 100. The potential range of adaptation scores is 0 to 100, with higher scores indicating more positive responses (Fawcett, 2006). The formula for the scoring of the CBEQ and an example are given in the Figure 4.

Formula

Adaptation Score = (adapttot/(adapttot + ineffecttot)) x 100, where

adapttot = Σ (cbeq item 1 adaptive responses + cbeq item 2 adaptive responses + cbeq item 3 adaptive responses + cbeq item 4 adaptive responses + cbeq item 5 adaptive responses), and

ineffecttot = Σ (cbeq item 1 ineffective responses + cbeq item 2 ineffective responses + cbeq item 3 ineffective responses + cbeq item 4 ineffective responses + cbeq item 5 ineffective responses)

Example

Adaptation Score = (13/(13+2)) x 100 = 86.67

Figure 4. The formula for calculating the Caesarean Birth Experience Questionnaire adaptation score and an example.

A *Background Data Sheet* (BDS), which was developed by the investigators for this study, was used to record demographic and perinatal information. Some items on the BDS, such as race, ethnicity, and education, were individualized for each country. Type of caesarean birth was measured by coding each woman's answer to the BDS question, "When did you find out this baby was to be born by the caesarean method?" as 0 = unplanned and 1 = planned. Number of caesarean births was measured by coding each woman's answer to a BDS item asking for a list of her children's method of delivery as 0 = primary and 1 = repeat. Preparation for caesarean birth was measured by coding each woman's answer to the BDS question, "Did you feel prepared for your caesarean birth?" as 0 = No and 1 = Yes.

Procedure

The study was approved by university and hospital institutional review boards, and the women gave informed consent in writing when data were collected in person or orally when data were collected via telephone. Confidentiality was safeguarded through the use of code numbers on the BDS, POBES, and CBEQ.

Data were collected by investigator-trained nursing students, midwifery students, or staff nurses, who interviewed each woman during the postpartum period in person or via telephone. The women's responses to the CBEQ were either recorded verbatim or audio tape recorded and later transcribed. No difference in the quality of data was noted for data collected by students or staff nurses, or for data obtained from in person or telephone interviews.

Missing values analysis revealed that 2 (0.4%) of the 488 participants had missing data for the CBEQ adaptation score, and 17 (3.5%) of the participants had missing data for the POBES score. Mean scores for the women from the relevant state in the United States or for those from Finland or Australia were imputed (Munro, 2005).

Findings

Descriptive statistics for the scores of the measures of the middle-range theory concepts for the women from each country are given in Table 2.

Table 2. Descriptive Statistics for the Middle-Range Theory Concepts by Country (N = 488)

Concept	United States (n = 253)	Finland (n = 213)	Australia (n = 22)
Type of Caesarean Birth (n, %)			
Unplanned	134 (53%)	106 (50%)	11 (50%)
Planned	119 (47%)	107 (50%)	11 (50%)
Number of Caesarean Births (n, %)			
Primary	177 (70%)	182 (85%)	17 (77%)
Repeat	76 (30%)	31 (15%)	5 (23%)
Preparation for Caesarean Birth (n, %)			
Yes	156 (62%)	178 (84%)	15 (68%)
No	92 (36%)	27 (12%)	7 (32%)
Not reported	5 (2%)	8 (4%)	
Perception of the Birth Experience			
POBES Scores (M (SD) Range)	3.39 (0.42)	3.37 (0.54)	3.26 (0.51)
	2.14-4.96	2.12-4.66	2.29-4.07
Responses to Caesarean Birth			
Adaptation Scores (M (SD) Range)	51.89 (23.97)	55.74 (23.05)	47.26 (21.31)
	0-100	0-100	5.56-86.67

Type of Caesarean Birth: The Focal Stimulus

There were no differences in type of caesarean birth across countries, $\chi^2(2, N = 488) = 0.493$, $p = .782$. Approximately one-half of the women (n = 251, 51%) had unplanned caesarean births; the other half (n = 237, 49%) knew that they would have a caesarean birth anytime from the beginning of the pregnancy to a few days before delivery. Slightly more than one-third (36%) of the caesareans in the United States and Australian subsamples were due to fetal factors, such as fetal distress, breech presentation, and nucal cord. Slightly more than one-half (52%) of the caesareans in those subsamples were due to maternal factors, such as pre-eclampsia, placenta previa, failure to progress, and previous caesarean birth; the reason was not known for one-eighth (12%) of the caesareans. Reasons for the caesarean births were not available for the Finnish subsample.

Number of Caesarean Births: A Contextual Stimulus

The Finnish subsample included a greater percentage of women who had a repeat caesarean birth than those who had a primary caesarean compared to the respective percentages for the United States and Australian subsamples, $\chi^2(2, N= 488) = 15.683$, $p < .001$. Overall, more than three-quarters (n = 376, 77%) of the women had a first caesarean birth, and slightly less than one-quarter (n = 112, 23%) experienced a second or subsequent caesarean.

Preparation for Caesarean Birth: A Contextual Stimulus

The Finnish subsample included a greater percentage of women who felt prepared for their caesarean birth than those who did not feel prepared compared to the respective percentages for the United States and Australian subsamples, $\chi^2(2, N= 475) = 33.295$, $p < .001$. Overall, almost three-quarters (n = 349, 71%) of the women reported that they felt prepared, whereas slightly more than one-quarter (n = 126, 26%) indicated they did not feel prepared. Data were not available for 13 (3%) women, and codes for missing data were not imputed due to lack of any logical way to determine the correct code.

Associations Between the Concepts Representing the Focal and Contextual Stimuli

Chi-square analysis revealed that more women had unplanned, primary caesarean births (n = 244) than those who had planned repeat caesareans (n = 105), $\chi^2 = 118.808$ (1, N = 488), $p <.001$. Only 7 women had unplanned repeat caesareans, and 132 had planned primary caesareans. Differences were found in preparation for caesarean birth between the women who had unplanned caesareans and those who had planned caesareans, $\chi^2 = 83.94$ (1, N = 475), $p < .001$, as well as for the women who had primary caesareans and their counterparts who had repeat caesareans, $\chi^2 = 16.311$ (1, N = 475), $p < .001$. As might be expected, women who had unplanned

caesareans and those who had primary caesareans were less likely to feel prepared than their counterparts who had planned or repeat caesareans.

Perception of the Birth Experience: The Cognator Subsystem

One way ANOVA revealed no differences in perception of the birth experience for the women from the United States, Finland, and Australia, $F(2, 485) = 0.857$, $p = .425$. POBES scores ranged from 2.12 to 4.96 ($M = 3.38$, $SD = 0.48$) for the 488 women in this study.

Responses to Caesarean Childbirth: The Modes of Adaptation

Analysis of the CBEQ yielded a total of 5170 responses from the 488 women; 2716 (53%) of those responses were categorized as adaptive, and 2454 (47%) were categorized as ineffective. The quotations from the women given below exemplify adaptive and ineffective responses for each CBEQ question.

How did you feel, physically and emotionally, when you found out you were to have your baby by the caesarean method? One woman's answer reflected an adaptive response to finding out that she was to have a caesarean birth. This woman, who had a planned caesarean delivery, simply commented she was "relieved." Two other women's answers revealed ineffective responses. One woman, who had a planned caesarean birth, simply stated she was "mad." The other woman, who had an unplanned caesarean, declared she was "distracted, unconfident, scared, shaky, and nervous." Another woman's comments reflected both adaptive and ineffective responses to finding out that she was to have a caesarean birth. This woman, who had a planned caesarean delivery, noted, "I was nervous at the beginning of the week, then that day [of delivery], I was more relaxed because my family and fiancé were there."

How did you feel, physically and emotionally, during the actual birth experience? One woman, who had an unplanned caesarean birth, provided an answer that revealed adaptive responses. She commented that she was "happy that he was here, relieved." In contrast, another woman's answer reflected ineffective responses. She explained that although she was having a planned caesarean delivery, she was "worried about the baby." Still another woman, who had a planned caesarean delivery, responded with both adaptive and ineffective comments: "I felt good [but was in] a bit of pain."

What happened after the baby was born? How did you feel, physically and emotionally, during that time? One woman's answers reflected adaptive responses. This woman, who had a planned caesarean birth, commented, "They showed me my baby, and I was relieved." Another woman, who had an unplanned caesarean birth, expressed ineffective responses. She stated, "They took [the baby] to the table. No one would answer my questions. This man was in my ear asking me a whole bunch of questions about medicine, and I kept asking him questions like, 'Is she OK?' and nobody would answer my questions." Yet another woman, who had a planned caesarean, gave an answer that reflected both adaptive and ineffective responses. She declared, "[I was] glad and mad at the same time."

What were your greatest needs during the entire experience? Several women indicated that their greatest need was for "reassurance" and "information." One woman, who had a planned caesarean, stated that she "was alert and informed," which reflects an adaptive response. Another woman, who had an unplanned caesarean, stated that her greatest needs were for "somebody to listen." Her comment reflects an ineffective response because that need was not met. A combination of adaptive and ineffective responses was evident in the comments of a woman who had a planned caesarean. She explained that she had a "spinal to calm me down. I am terrified of needles. They didn't allow my fiancé in during the spinal but he did come in after the spinal was done."

What could have been done, and by whom, to make this experience better for you? One woman, who had a planned caesarean birth, provided an answer that reflected an adaptive response; her needs had been met. She stated, "Nothing—things went really well. It helped knowing that I was the only one having a C section that day." Another woman, who also had a planned caesarean birth, provided an answer that reflected an ineffective response because her need was not met. She explained that "having the baby delivered [vaginally]" would have made the experience better for her. A few other women commented that the experience would have been better for them if their obstetrician had delivered the baby; they did not indicate who did deliver the baby, although it could be assumed to have been a medical resident.

When the women's responses to the CBEQ were converted to adaptation scores, one way ANOVA revealed no differences in those scores for the women across countries, $F(2, 485) = 2.338$, $p = .098$. The women's adaptation scores across countries ranged from 0 to 100 ($M = 53.37$, $SD = 23.53$).

Test of the Theory of Perceptions of and Responses to Caesarean Birth

The direct and indirect effects of the theory concepts were tested by path analysis using stepwise regression techniques (Norris, 2005). The regression analyses were run with a sample of 475 women due to missing data for preparation for caesarean birth (Table 1). The results are displayed in Figure 5 and Table 3.
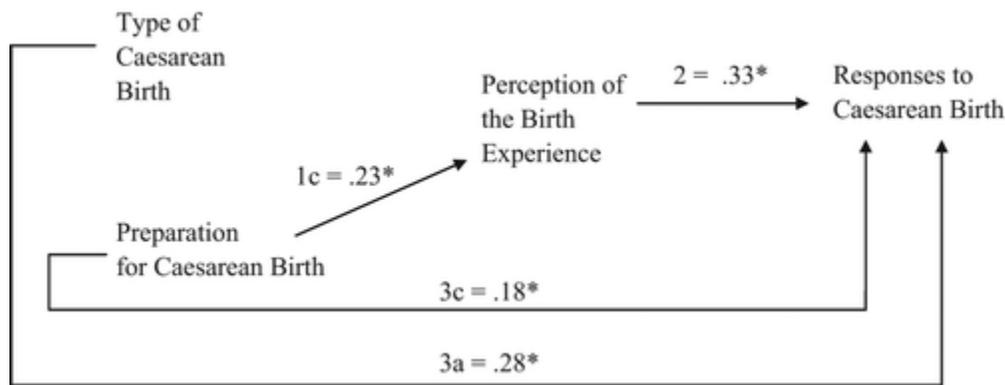

Figure 5. Path diagram of the relations between the middle-range theory concepts after testing.
Note. * = p < .001

Table 3. Propositions of the Theory of Perceptions of and Responses to Caesarean Birth Before and After Testing

Propositions Before Testing	Results of Theory-Testing
A. Type of caesarean birth is directly related to perception of the birth experience	Not supported.
B. Number of caesarean births is directly related to perception of the birth experience	Not supported.
C. Preparation for caesarean birth is directly related to perception of the birth experience	Supported.
D. Perception of the birth experience is directly related to responses to caesarean birth	Supported.
E. Type of caesarean birth is directly related to responses to caesarean birth	Supported
F. Number of caesarean births is directly related to responses to caesarean birth	Not supported.
G. Preparation for caesarean birth is directly related to responses to caesarean birth	Supported.
H. Type of caesarean birth is indirectly related to responses to caesarean birth through perception of the birth experience	Not supported
I. Number of caesarean births is indirectly related to responses to caesarean birth through perception of the birth experience	Not supported.
J. Preparation for caesarean birth is indirectly related to responses to caesarean birth through perception of the birth experience	Supported.

The regression of perception of the birth experience on type of caesarean birth (Figure 3, path 1a), number of caesarean births (path 1b), and preparation for caesarean birth (path 1c) revealed that preparation was the only statistically significant path, Beta = 0.225, $t = 5.022$, $p < .001$, $R^2 = .051$ (Figure 5). On average, the women who felt prepared for the caesarean birth had a somewhat more positive perception of the birth experience ($M =$

3.44, SD = .45) than the women who did not feel prepared (M = 3.20, SD = .51). Results did not change when the analysis was rerun with interaction terms for type of caesarean birth with number of caesarean births and for type of caesarean birth with preparation for caesarean birth.

The regression analysis for the adaptation scores on perception of birth experience ([Figure 3](#), path 2), type of caesarean birth (path 3a), number of caesarean births (path 3b), and preparation for caesarean birth (path 3c) revealed a statistically significant, positive, and moderate relation between perception of the birth experience and responses to caesarean birth (path 2), Beta = 0.33, t = 8.422, p < .001 ([Figure 5](#)). The analysis also revealed a statistically significant relation for type of caesarean birth (path 3a), Beta = 0.28, t = 6.647, p < .001 and preparation for caesarean birth (path 3c), Beta = 0.182, t = 4.247, p < .001 with responses to caesarean birth ([Figure 5](#)). The R^2 for the analysis was .312. On average, the women who had a planned caesarean birth had more positive responses to caesarean birth (M = 62.72, SD = 21.38) than the women who had an unplanned caesarean birth (M = 44.53, SD = 22.03). Similarly, the women who felt prepared for caesarean birth had more positive responses (M = 58.85, SD = 21.66) than those who did not feel prepared (M = 38.87, SD = 22.45). Once again, results did not change when the analysis was rerun with interaction terms for type of caesarean birth with number of caesarean births and for type of caesarean birth with preparation for caesarean birth.

The direct effect for type of caesarean birth is the path 3a coefficient, 0.28. There was no indirect effect for type of caesarean birth on responses to caesarean birth; therefore, the total effect for type of caesarean birth on responses to caesarean birth is 0.28.

The direct effect for preparation for caesarean birth on responses to caesarean birth is the path 3c coefficient, 0.18. The indirect effect for preparation for caesarean birth on responses to caesarean birth through perception of the birth is the product of the path 1c and path 2 coefficients, 0.23 x 0.33 = 0.08. The total effect for preparation on responses is the sum of the direct and indirect effects, 0.18 + 0.08 = 0.26.

Discussion

The study findings do not support the empirical adequacy of the theory of perceptions of and responses to caesarean birth. As can be seen in [Table 3](#) and by comparing [Figures 3](#) and [5](#), a more parsimonious theory emerged from the path analysis. Lack of support for theory propositions B, F, and I indicates that number of caesarean births was not a relevant contextual stimulus in this study. Theory propositions A and H were not supported, which suggests that type of caesarean birth was not the RAM focal stimulus for perception of the birth experience; instead, the support found for theory propositions C, G, and J suggests that preparation for caesarean birth is the focal stimulus for perception of the birth experience. Lack of support for theory proposition A conflicts with [Marut and Mercer's (1979)](#) finding of less positive perceptions of the birth experience by women who had unplanned caesarean births.

Support for theory propositions E and G is consistent with the RAM proposition advanced by [Fawcett (2003)](#) that stimuli are directly related to the modes of adaptation. Comparison of the path coefficients for theory propositions E (0.28) and G (0.18) indicates that type of caesarean birth is the focal stimulus for responses, and that preparation for caesarean birth is the contextual stimulus for responses. This conclusion also is supported by the finding of a slightly greater total effect for type of caesarean birth (0.28) than for preparation for caesarean birth (0.26) on responses to caesarean birth. The positive path coefficient for the relation between type of caesarean birth and responses conflicts with the findings of a negative relation in earlier studies. The change in the direction of the relation may be explained by the present study findings for numbers of adaptive and ineffective responses. More specifically, the results for responses to caesarean birth, as measured by the

number of adaptive and ineffective responses to the CBEQ, conflict with findings of studies of women's responses to caesarean birth that were conducted in the 1970s, 1980s, and 1990s (Fawcett, 1981; Fawcett & Burritt, 1985; Fawcett & Weiss, 1993; Reichert et al., 1993). The women in this study had more adaptive than ineffective responses, whereas women in earlier studies had more ineffective than adaptive responses, especially if they had unplanned caesarean births. These findings underscore Shearer's (1989) speculation that caesarean birth has become normalized, perhaps even more so with the constantly increasing caesarean birth rate during in the early years of the 21st century. Support for theory proposition D is consistent with the RAM proposition of a relation between the cognator subsystem and the modes of adaptation

Overall, the study findings support the soundness of the RAM, in that some theory propositions (C, D, E, G, J) linking stimuli with the cognator subsystem or with modes of adaptation and theory proposition D linking the cognator subsystem with modes of adaptation were supported. Inspection of R^2 values indicates that type of caesarean birth, preparation for caesarean birth, and perception of the birth experience accounted 31% of the variance in responses for caesarean birth, which is considered a large effect size (Cohen, 1988). Comparison of the path coefficients indicates that the relation between perception of the birth experience and responses to caesarean birth (0.33) is stronger than the relation of either type of caesarean birth (0.28) or preparation for caesarean birth (0.18) to responses. This finding suggests that the link between the cognator subsystem and the modes of adaptation is stronger than the link between stimuli and modes. Continued inspection of R^2 values indicates that the link between stimuli and the cognator subsystem is weak, inasmuch as preparation for caesarean birth accounted for only 5% of the variance in perception of the birth experience and the path coefficient was 0.23, which is considered a small effect size (Cohen, 1988). Continued investigation of the relative strength of these relations is warranted.

The results of this study also support the continued utility of the RAM as a guide for the content analysis of responses to the CBEQ questions (Fawcett, 2006). All of the women's responses to the CBEQ could be categorized within the four RAM modes of adaptation, which indicates that the four modes provide a comprehensive frame of reference for examination of women's responses to the entire caesarean birth experience.

The findings of no differences in perception of the birth experience and in responses to caesarean birth for women from the three countries suggest that the experience of caesarean birth is similar across international boundaries. Inspection of the scores for perception of the birth experience and responses to caesarean birth indicate that on average, the women had essentially neutral perceptions and responses, findings that are similar to earlier studies (Cranley et al., 1983; Fawcett et al., 1992; Marut & Mercer, 1979). However, the ranges for those scores indicate that some women had somewhat negative or somewhat positive perceptions and some had extremely negative or extremely positive responses (Table 2). Systematic assessment of women's perceptions and responses is needed to allow those women who have negative perceptions and responses to tell the story of their birth experience, which may help them to find meaning in the experience (Affonso, 1977) and reduce postpartum psychosocial morbidity, including depression (Lavender & Walkinshaw, 1998).

The findings that a greater percentage of Finnish women had a repeat caesarean than their United States and Australian counterparts may explain why a greater percentage of the Finish women also felt more prepared for the caesarean. Although associations were found between the theory concepts representing the focal stimulus—type of caesarean birth–and the contextual stimuli—number of caesarean births and preparation for caesarean birth—the interaction terms were not related to perceptions of or responses to caesarean birth in the regression analyses.

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