Amount, Source, and Quality of Support as Predictors of Women's Birth Evaluations

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ABSTRACT: Background: *This paper examines the separate effects of the perceived amount, source, and quality of support during labor and delivery on women's positive and negative evaluations of their birth experiences.* **Methods:** *Data come from the Listening to Mothers I and II (LTM) surveys (*n = *2,765). Women's perception of support was regressed separately onto indices of positive and negative words that women associated with their labor and delivery.* **Results:** *The total number of support sources, type of support person, and quality of support all impacted women's birth evaluations across different regression models, controlling for demographics, birth interventions, and other birth characteristics. Support overall had a greater effect on increasing women's positive evaluations, but was not as protective against negative evaluations. Support from medical and birth professionals (doctors, nurses, doulas) had the greatest effect on women's positive evaluations. Good partner support was complexly related: it was associated with less positive evaluations but also appeared to have a protective effect against negative birth evaluations.* **Discussion:** *Support in childbirth is a complex concept with multiple dimensions that matter for women's birth evaluations. Support from nursing staff, doctors, and doulas is important for enabling positive evaluations while support from partners is more complexly related to women's evaluations. Research on support for laboring women should more extensively address the division of labor between different sources of support. (BIRTH 43:3 September 2016)*

Key words: *birth evaluations, labor support, social support, sources of support*

One of the most important predictors of a woman's evaluation of her labor and birth is the quality, source, and amount of support she receives from medical and birth professionals (e.g., doctors, nursing staff, midwives, doulas) and her partner (1–15). The presence of, and the quality of support offered by medical professionals and the partner can mean the difference between a woman recalling her birth "with joy or anger, with pride or anguish, with a sense of accomplishment or a sense of failure" (16). A parturient mother's support team can provide her with emotional support, advocacy, physical comfort, information, and, when partners or doulas are present, liaison with hospital staff (13–15,17,18). Because women in labor are especially dependent on the actions of others, these actions have the potential to make women feel safe and comfortable, or frightened and anxious during labor.

Despite the importance of the quality of the support team for how parturient women experience and evaluate their births, the effects of support are complex, and not well understood. It is clear from previous research that women do not evaluate labor and birth experiences on a single dimension (19–21). Women may simultaneously feel joy and disappointment about the same experience (4). As a consequence, some researchers have considered positive and negative experiences separately

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(22,23). However, because most studies in this literature consider the effects of support from only a single member of the support team, it is unclear how different members of the labor and delivery support team may simultaneously and independently affect women's positive and negative evaluations of childbirth. Studies of women's birth experiences variously attribute positive and negative outcomes to support (or its absence) from midwives (4,13,24–26), nurses (27,28), doctors (4), partners (4,27), and other family or friends (15). These studies make little effort to investigate independent effects of different kinds of support on positive and negative experiences. Yet, doctors, nurses, and partners have different roles in the labor and birth processes and thus are likely to affect women's experiences in different ways.

This paper addresses these issues by examining the separate effects of perceived amount, source, and quality of support on women's positive and negative birth evaluations using the Listening to Mothers I and II survey data (n = 2,765). We simultaneously examine support from partners, family/friends, nursing staff, doctors, midwives, and doulas to assess women's support more holistically and comparatively. Because women evaluate birth on multiple dimensions simultaneously, we predict positive and negative birth evaluations in separate models.

Methods

Data come from waves I and II of the Listening to Mothers (LTM) survey, which were collected in 2002 and 2006, respectively. Wave III (2013) was not yet publicly available at the time of analysis. LTM is a nationally representative survey of U.S. women's labor and delivery experiences. The first two waves have roughly equivalent sample sizes: 1,583 in LTM I and 1,573 in LTM II. All respondents had a singleton birth within 2 years before each survey was administered. Most women completed the survey online, although approximately 8.5 percent of women were interviewed through telephone. To develop a national profile of childbearing women, the data were adjusted using demographic and propensity score weighting using Harris Interactive's proprietary methodology. The following analyses reflect weighting of the raw data (29). The study was considered exempt by Institutional Review (IRB # 12-374003UE).

Sample

After merging LTM I and II together, the total sample size was 3,156. For this study, we used two additional selection criteria: 1) women had to have given birth in a hospital (<3% had a nonhospital birth, making statistical comparison difficult), and 2) women had to have complete data on all variables included in the regression models. After accounting for these criteria, the analytic sample was 2,765 (87.6% of the original sample).

Variables

The two dependent variables of interest were *positive* and *negative* indices of women's birth evaluations. These were measured using a series of 12 words read to each respondent; she was asked whether the word "describes how you may have felt" during her last labor. Six words had a positive connotation (alert, calm, capable, confident, powerful, unafraid), with an alpha of .77, and six words had a negative connotation (agitated, frightened, groggy, helpless, overwhelmed, weak), with an alpha of .69. Higher values on the positive index indicate more positive feelings associated with birth, and higher values on the negative index indicate more negative feelings associated with the birth.

The independent variables of interest were women's perception of the *amount, source*, and *quality* of support received during labor and delivery. These variables were derived from a series of questions featured on the LTM survey which enquire about the sources and quality of intrapartum support. The first question explained to respondents that "Some women in labor receive supportive care, which can involve helping to make them more comfortable physically, providing emotional support, and providing information," and then asks them, "Who, if anyone, provided you with this type of support while you were in labor or giving birth?" (30). Amount of support was measured as a count of the number of support sources women had overall. Our source of support variable captured whether women had support from the following (1 = yes; 0 = no): partners, family/friends, nurses, doctors, midwives, and doulas. Women were then asked to rate each support source on a scale of 1 ("poor") to 4 ("excellent"). To compare across women with different sources of support, we collapsed these ratings into three categories: 1) good support, 2) poor support, and 3) no support from source.

All models controlled for mode of delivery, number of birth interventions, labor duration, woman's age, income, education, race, and number of births she had at the time of survey. Previous research has revealed that the number of previous births, mode of delivery, use of birth interventions, and length of labor can affect women's perceptions of their birth (1,4,9,19,22,31–36).

Mode of delivery was measured as vaginal, planned cesarean, and unplanned cesarean (omitted reference group). Birth interventions were measured as an index from 13 questions about whether (=1) or not (=0) women were subjected to the following interventions: 1) labor induction, 2) labor augmentation, 3) electronic fetal monitoring, 4) IV, 5) catheter, 6) one or more vaginal exams, 7) epidural, 8) other pain medications, 9) drug free pain management, 10) enema, 11) shaving of the pubic region, 12) episiotomy, and 13) use of forceps or vacuum extraction. These interventions were selected based on the categories of birth/labor interventions as defined in the LTM Survey and Report (30). We coded women into three categories for labor duration: precipitous labor (<3 hours), prolonged labor (>12 hours), and intermediate labor (3–12 hours). As the LTM survey asks respondents how many hours passed between the time they first experienced regular contractions and the delivery of their baby, our measure of labor duration includes both the latent and active phases of labor. Age was measured in years. Income was an ordinal variable with categories ranging from "1" (<$15,000) to "11" ($250,000 or more). Missing values on the income measure were filled in using Census data on median income matched to a respondent's zip code. Education was an ordinal variable, with "1" representing less than a high school diploma, "5" representing a college graduate, and "7" indicating a graduate-level degree. Race was measured as white (=1) versus nonwhite (=0). Finally, number of births was a count variable, ranging from 1 to 6. The final category was recoded to include all women with six or more births, to minimize possible influence of outliers on the regression models.

Analysis

Six linear regression models were run to separately predict women's positive and negative birth evaluations for each of the dependent variables of interest: amount, source, and quality of support. Birth evaluation indices included up to seven values, ranging from 0 to 6, so we used linear regression analysis. We also tested ordinal logistic regression models because of the limited number of response categories. Results were substantively similar, so we present the linear regression results for ease of interpretation.

Results

On average, women's positive birth evaluations were higher than their negative birth evaluations (2.9 compared with 1.9, respectively; see Table 1). Overall, women had two to three support sources. Partners were most common (86.6% of women had partner support), followed by nursing support (73.6% of women), and then physician support (46.5% of women). Because all of the women in our analytic sample gave birth in a hospital, most probably interacted with a physician or nurse at some point during their stay, although only 46.5 percent of our sample perceived physicians as

Table 1. Descriptive Statistics for United States Women with Hospital Births, Listening to Mothers Survey Data I (2002) and II (2006), *n* = 2,765

	*Mean**	*Percent*†	*SD*
Positive birth index	2.9		1.96
Negative birth index	1.9		1.73
Amount of support (# sources)	2.5		1.19
Source of support			
Partner		86.6	
Family/Friend		42.6	
Nurse		73.6	
Doctor		46.5	
Midwife		8.7	
Doula		3.8	
Quality of support‡			
Partner	3.5		0.83
Family/Friend	3.5		0.76
Nurse	3.4		0.79
Doctor	3.4		0.83
Midwife	3.6		0.70
Doula	3.5		0.82
Controls			
Mode of delivery			
Vaginal delivery		72.1	
Planned cesarean		14.1	
Unplanned cesarean		13.8	
Number of interventions	6.7		2.00
Labor duration			
Precipitous labor		23.1	
Intermediate labor		49.8	
Prolonged labor		27.0	
Age (years)	29.7		5.16
Family income§	4.5 ($50k to $74,999)		1.77
College educated		72.2	
White, non-Hispanic		72.5	
Number of births	2.0		1.04

*Weighted by LTM survey population weights. *Reported for ordinal or continuous variables. †Reported for categorical variables. ‡Rated on a scale from 1 to 4, where 4 = excellent support. §Measured in 11 categories reporting income ranges. The value 4.5 represents the range $50k–$74,999.*

providing support according to the definition given on the LTM questionnaire, and 73.6 percent perceived nurses as providing support. Less than 9 percent of women had support from a midwife during their hospital birth, and less than 4 percent of women in the sample had a doula present at their hospital birth.

Regression Models 1 and 2 predicting the number of *positive* and *negative* words that women associated with their birth experience examine amount of support as the key independent variable of interest (Table 2). Amount of support was significantly associated with women's positive evaluations of childbirth: for every additional source of support given to parturient women, the number of positive words they used to describe their experience increased by .27 words. However, a significant association between amount of support and negative birth evaluations could not be observed. This observation reinforces that women's positive and negative evaluations are indeed separate dimensions of women's overall birth experience.

Models 3 and 4 examine how source of support affects women's birth evaluations. Having any support from nursing staff, doctors, and doulas was associated with women having more positive birth evaluations on average, the largest effect being support from a doula; women who received support from a doula used .78 more positive words to describe their experience than women who did not receive support from a doula. However, no association between absence of one of these sources of support and negative birth evaluations was observed. Furthermore, the simple presence of certain support sources (partners, family/friends, midwives) was not associated with either positive or negative evaluations.

Models 5 and 6 address the final element of birth support in this study: how women perceived the quality of the support source and the effect this quality rating had on women's birth evaluations. Women who felt that they had received good support (compared with no or poor support) from nursing staff, doctors, and doulas had more positive birth evaluations on average. Again, it can be observed that the strongest effects of good support on a positive birth evaluation come from a doula; women who judged the support from their doula to be "good" used .82 more positive words to describe their birth, compared with women who either judged the support from their doula to be poor, or had no doula at all. Similar to findings for source of support

Table 2. Linear Regression Modeling Amount, Source, and Quality of Support as Predictors of Women's Birth Evaluations: United States Women with Hospital Births, Listening to Mothers Survey Data I (2002) and II (2006), n = 2,765

	Models 1–2				*Models 3–4*				*Models 5–6*			
	Positive index		*Negative index*		*Positive index*		*Negative index*		*Positive index*		*Negative index*	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Amount of support (# sources)	0.27***	0.05	−0.02	0.04								
Source of support												
Partner					−0.27	0.16	−0.23	0.15				
Family/Friend					0.19	0.11	0.09	0.10				
Nurse					0.45***	0.14	0.04	0.12				
Doctor					0.35**	0.11	−0.02	0.11				
Midwife					0.23	0.20	−0.27	0.18				
Doula					0.78**	0.25	−0.04	0.20				
Quality of support[†]												
Partner: good									−0.24*	0.12	−0.29*	0.12
Family/Friend: good									0.12	0.11	0.16	0.10
Nurse: good									0.39**	0.12	−0.17	0.12
Doctor: good									0.25*	0.12	0.00	0.11
Midwife: good									0.07	0.21	−0.28	0.20
Doula: good									0.82**	0.28	−0.01	0.22
Constant	1.57***	0.38	3.84***	0.35	1.91***	0.38	3.94***	0.36	2.13***	0.38	3.93***	0.34
R^2	0.15		0.15		0.16				0.15		0.16	

*Weighted by LTM population weights. *p < 0.05, **p < 0.01, ***p < 0.001. [†]Compared with no/poor support. Controls not shown include: mode of delivery, intervention index (# of interventions), labor duration, age, family income, education, race, number of births.*

(Models 3 and 4), however, no association between the quality of support from these specific sources and women's negative birth evaluations was found. Women who perceived good support from their partners actually scored somewhat lower on their average positive birth evaluation index compared with women who received either poor or no partner support, which is counter to our expectations. We explore this finding more in the section below. Having good partner support, however, was also associated with a decrease in women's negative birth evaluations, indicating that good partner support may have offered a protective effect for women against negative experiences. Quality of support from family and friends, and midwives was not significantly associated with women's birth evaluations in this study. However, as noted previously, less than 9 percent of women in the sample had a midwife, making it difficult to reliably assess statistical associations here. It is highly likely that the nonsignificant effect is a function of the small numbers of hospital births being attended by midwives.

Discussion

Several conclusions may be drawn from these analyses. The total number of support sources, type of support person, and quality of support have a much stronger and direct relationship with women's positive birth evaluations compared with their negative birth evaluations. This phenomenon reinforces the notion that women may evaluate birth on both positive and negative dimensions, rather than understanding their experience as either "good" or "bad" (19–21). We also found that support from medical and birth professionals (nursing staff, doctors, doulas) was more consistently related to women's positive birth experiences than support from persons drawn from the mother's social networks, including friends, family, and partners, which is consistent with previous research that emphasizes the importance of the quality of care from medical staff (4,25–28) and the crucial role of doulas in supporting laboring women (14,37). Furthermore, the data presented here suggest that women who perceived good support from their partners had lower average scores on the positive evaluation index than women who had poor or no partner support. Yet, women with good partner support also had lower scores on the negative index, suggesting partners offered a protective effect for women. Given the research emphasizing partner support for laboring women (4,27), how are these seemingly paradoxical effects to be explained? In analyses not shown here, we examined bivariate associations between good versus poor/no partner support and each of the words comprising the positive birth index (alert, calm, capable, confident, powerful, unafraid). Women did not significantly differ on their frequency of reporting yes to any word except for feeling "capable"—in this instance, women with good partner support were *more likely* to state that they felt capable ($\chi^2 = 5.35$, $p < .05$). Additionally, women with good partner support had higher average scores on the positive evaluation index in bivariate analyses (2.97 vs 2.85, respectively), although this difference was not statistically significant. These all point to the expectation that good partner support should have contributed to more positive evaluations. We hypothesize that this effect was observed because women having a more difficult time with their birth experience may have required better support from partners. In other words, we suspect the causal direction may be reversed in this instance: it may be that not having a positive birth experience causes support from the partner to improve, or at least the parturient mother's perception of it. Although this hypothesis cannot be directly tested with our analyses, it fits more consistently with the findings from prior research emphasizing the importance of partner support for laboring women. This interpretation also fits with the additional finding from our study that women who had good partner support had lower negative birth evaluations on average, suggesting partners offered a protective or moderating effect here.

And finally, the models in our analysis are much more informative for understanding how support impacts positive birth evaluations, but show little association between support and negative birth evaluations, despite the variables having similar explanatory power across all six models (R^2 ranged from .15 to .16 for all models). The full models from our analyses show that the main factors predicting negative birth evaluations were: mode of delivery, number of birth interventions, labor duration, age, and number of births. As such, although support can help provide the context for a more positive birth, there are a variety of other factors about the birth experience itself that can influence women's negative evaluations.

There are some notable limitations here. First, the data here are drawn from two cross-sectional samples from 2002 and 2006. Another wave of LTM data (Wave III, 2013) has recently been made available. An important topic to address would be how the year of the survey might factor in to women's birth evaluations. Second, because only a limited number of women used midwife or doula care in this sample, it is possible that some effects are under-estimated here. We observed no effect of midwife support despite a long and consistent literature on the midwifery model of care and its potential for empowering women in childbirth (38). However, this result needs to be interpreted cautiously, as the small number of women in our

sample who received support from a midwife during their hospital birth makes reliable statistical comparison difficult. Third, quantitative analyses are limited to understanding broader trends in women's attitudes and experiences. For a more holistic approach to addressing support in birth, these results need to be examined vis-à-vis the qualitative literature.

Despite these limitations, this paper has made several contributions to understanding how support affects mothers' birth evaluations. This study is the first to examine the independent effects of amount, source, and quality of social support on both positive and negative birth experiences separately using a large, nationally representative sample. The results clearly point to a greater need for quantitative and comparative analysis of women's birth evaluations across different sources of support. In particular, understanding how partner support may offer more protective effects against a negative birth experience is an important line of future inquiry.

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