## **Ambivalent Intentions for Pregnancy: Measurement, Partner Effects, and Future Intentions**

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## Abstract

Unintended pregnancies impact the wellbeing of children and parents and play an important role in fertility. However, measurement of unintended pregnancies may be compromised by dichotomized measures which fail to fully capture women's experiences. Research clearly indicates the presence of a substantial portion of women who are ambivalent about their pregnancy, and who thus do not fit into unidimensional definitions. The current study leverages standard measures of pregnancy intention to create a multidimensional measurement that identifies ambivalence. Using this measurement, about a third of mothers in the Early Childhood Longitudinal Study – Birth Cohort and the Millennium Cohort Study are identified as having ambivalent intentions. Mothers with ambivalent intentions have characteristics which are distinct from both mothers with intended and those with unintended pregnancies, although partnered ambivalent mothers are somewhat more similar to partnered mothers with unintended pregnancies. The future fertility intentions of both partnered and unpartnered ambivalent mothers fall between the future intentions of mothers with intended and unintended prior pregnancies.

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## **Ambivalent Intentions for Pregnancy: Measurement, Partner Effects, and Future Intentions**

It is estimated that approximately 32% of all births in the United States in 2001 were unintended by the mother, a number which has been increasing (Finer & Henshaw, 2006). This pattern is similar in the UK, with approximately 30% of births estimated to be unintended (Fleissig, 1991). In addition to the strains the parents may experience, these unintended births place the children at risk. Health risks begin before birth, as mothers with unintended pregnancies are less likely to obtain timely prenatal care and more likely to use tobacco and alcohol during the pregnancy (Altfield et al., 1998). Infants born to parents who both did not intend the pregnancy are at heightened risk of prematurity, low birth weight, and not being breastfed (Hohmann-Marriott, 2009; Korenman, Kaestner, & Joyce, 2002). As they grow up, children who were unintended by their mothers are at risk of lower subjective wellbeing (Brown & Eisenberg, 1995; Axinn, Barber, & Thornton, 1998).

Research typically classifies pregnancies as either intended or unintended. This dichotomized measurement of intention is problematic because it may ignore or confound aspects of the parents' experience, obscuring those who are ambivalent about the pregnancy. These parents cannot be easily classified as either an intended or an unintended pregnancy, and "It is this group, whose pregnancies appear to be neither planned nor unplanned, that is in the greatest need of study" (Klerman, 2000, p. 159).

Research using measures specifically designed to address pregnancy ambivalence provide a detailed look (i.e. Stanford et al. 2000; Piccinino & Peterson 1999), but many studies contain limited measurement of intentions. The question remains whether the important concept of ambivalence can be addressed by these more limited measures. The current analysis uses standard pregnancy intention questions from nationally-representative cohort studies in the US and UK to create a measure of ambivalence and assess the prevalence of ambiguous intentions. It also examines the association of ambivalence with mother's characteristics, parity, partner intentions, and the parental relationship, as well as the influence of ambivalence on intentions for future fertility.

#### Background

Brown and Eisenberg wrote in 1995 about the need to develop "more refined and differentiated measures of intention status that can accommodate important concepts like ambivalence, denial, and confusion" (p.24). Although some surveys have expanded their questions to allow for ambivalent responses (e.g. McQuillan, Greil, & Shreffler, 2010), as it is usually measured intention for pregnancy does not allow for the expression of ambivalence. For example, one standard measurement of intention codes pregnancies as intended (wanted at the time of conception or earlier), mistimed (wanted but later), and unwanted (not wanted at any time; Campbell & Mosher, 2000; Santelli et al, 2003). The mistimed category allows for some complexity, but it is most often combined with and interpreted as unintended. Dichotomized methods have substantial problems with both meaning and measurement.

These questions may not adequately access the meaning of intentions as experienced by women. The questions presume that there is a single status possessed by the woman that is measurable, and assume that becoming pregnant is a rational action which is considered and planned (Klerman, 2000, Santelli et al, 2003). However, the meaning to women may be less clear-cut than standard intention categories would suggest. Some women interviewed about their pregnancy intentions expressed ambivalence in their desires for pregnancy both pre and post conception (Stanford et al., 2000). About one-quarter of sexually-active women report being 'okay either way'; neither trying to become pregnant nor trying to avoid pregnancy (McQuillan, Greil, & Schreffler, 2010). Ambivalence was also expressed by the participants in Edin and Kefalas' (2005) study of unmarried mothers, as half characterized their most recent pregnancy as neither planned nor unplanned. This is typified by a young mother who, when asked if she had planned to get pregnant, replied "No, not really. In a way I did, in a way I didn't" (p.41). This is not surprising, as ambivalence about becoming pregnant has been associated with inconsistent contraceptive use (Higgins, Hirsch, & Trussell, 2008; Zabin, 1999).

The measurement of intention can include elements of cognition, behavior, and emotion. Each of these is measuring a distinct concept, making it important to distinguish between these three for accurate measurement (Klerman, 2000; Sable & Libbous, 2000). Cognitions or attitudes are typically assessed using questions asking about the wantedness and timing of pregnancy. Behaviors can be assessed through questions asking about contraceptive use or nonuse with the goal of conceiving, or questions asking about trying to get pregnant. Often emotions are assessed through questions asking about happiness with the pregnancy. Each aspect may have a different meaning to women; as was discussed above, the deliberate planning of proceptive or contraceptive behavior may not be salient to many women. These related yet distinct aspects of pregnancy intentions may be either congruous or incongruous.

Congruity of cognition, behavior, and emotion can indicate an unambiguously intended pregnancy, as when a woman wants to become pregnant, is not using contraception with the goal of conceiving, and is happy with the ensuing pregnancy. Conversely, congruity can indicate an unambiguously unintended pregnancy, as when a woman does not want to become pregnant, is using contraception to prevent a pregnancy, and is unhappy when a pregnancy nevertheless occurs.

However, cognitions, behaviors, and emotions do not always line up in such an orderly way. Trussell and colleagues (1999) compared all three, focusing particularly on women who had been using contraception when they became pregnant. They found that, of these women, 60% of those who gave birth subsequently classified their pregnancy as intended, despite their contraceptive behavior. Further, 90% of these women reported feeling happy or very happy with the pregnancy. Of the women using contraception who reported the pregnancy as unintended, a surprising 25% felt happy or very happy. Thus, these measures of behavior, cognition, and emotion are incongruent for a large number of women. A small study of women with unintended pregnancies confirms this, finding that almost half were not consistently using contraception, and of these, almost half reported being happy or very happy about pregnancy (Sable & Libbus, 2000). These cases where cognition, behavior, and emotion are incongruent present a challenge but also an opportunity to the researcher. Rather than viewing incongruence as a complication to be eliminated, it is more productive to view it as offering important insight into mothers' experiences.

This study leverages existing measurements of cognition, behavior, and emotion by using them in conjunction to create an assessment of ambivalent intentions. Ambivalent in this context is measured as incongruent cognitions, behaviors, and emotions. It can mean those of two minds, wanting and not wanting the pregnancy at the same time. It can also mean those who are open to a pregnancy but not actively trying to achieve one (OK either way) or those who are fatalistic (leaving the decision to chance or a higher power). The measurements used are found in the Early Childhood Longitudinal Study- Birth Cohort (ECLS-B) and the Millennium Cohort Study (MCS). Each survey asks a subset of standard intention questions which can be used to create measures of ambivalence, so the use of these two surveys allows for a more extensive test of the measures. These two surveys also include partner interviews, which allow for couple analyses.

The first objective of the study is to measure ambivalent intentions and compare this measurement of ambivalence with standard measurement of intentions. In the second objective, the association of these ambivalent intentions with mother characteristics will be examined to illuminate potential patterns. The third objective is to investigate the consequences of current ambivalent intentions on intentions for future fertility. Finally, the fourth objective focuses on partnered mothers to explore the association of father and relationship characteristics with mother's ambivalent intentions and intentions for future fertility.

#### Method

*Early Childhood Longitudinal Study* – *Birth Cohort.* Ambivalence is assessed as incongruence between behaviors and cognitions using data from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B). The ECLS-B is a nationally-representative survey of children born in the United States in 2001. Face-to-face and self-report interviews were conducted with mothers when the focal child was approximately 9 months old. In the ECLS-B, 10,495 biological mothers completed an interview, and of these, 8,910 (85%) completed all pregnancy intention items on the self-report questionnaire. These 8,910 mothers form the sample for the first three objectives. The ECLS-B also includes self-reports of coresident biological fathers, allowing for a couplelevel analysis of coresident couples. Of the mother respondents, 6,965had biological fathers coresident, and 5,469 of these fathers (78%) completed a survey. These 5,469 surveyed coresident couples form the sample for the form the sample for the surveyed

Attitudes to the pregnancy were asked in the ECLS-B using standard wantedness and timing questions. These were used in the current analysis to create four categories corresponding to standard measurements of intention attitudes: 1) *On-time* was when mothers reported the pregnancy as wanted and either on time or too late; 2) *Too soon* was when mothers reported

wanted or not sure and too soon; 3) *Too late* was when mothers reported wanted and too late; and4) *Unwanted* was when mothers reported unwanted.

Behavioral intentions were constructed using ECLS-B questions about mothers' contraceptive use and reasons for nonuse: 1) *Planning for* was when mothers were not using contraception because they wanted to get pregnant; 2) *Not planning* was when mothers were not using contraception for another reason; and 3) *Planning against* was when mothers were using any form of contraception.

When these behavioral and attitudinal measures of intention are compared with one another, the possibility of incongruent responses arises. Table 1 indicates congruent and incongruent categories of attitudes and behaviors in ECLS-B, with incongruent combinations highlighted and labeled Ambivalent. These ambivalent intentions are the focus of this study.

Table 1: ECLS-B Pregnancy Classification

The third and fourth objectives ask about mother's future fertility intentions. These are measured by subtracting the mother's current number of children from her ideal number of children. If the ideal number is greater, the mother is considered to have a desire for more children.

Mother characteristics include her age, education, ethnicity, employment, parity, and relationship status. Mother's age and years of education are continuous variables. Ethnicity is coded as four categories, White, Black, Hispanic (any race), and Asian. Employment is a dichotomous variable recording whether the mother was employed in the 12 months prior to the baby's birth. Parity is measured dichotomously as either her first child or not. Relationship status is coded as no resident partner, coresident unmarried partner, and coresident married partner.

Analyses of coresident couples include characteristics of the father and the relationship. Father characteristics are included using variables indicating absolute difference in age and years of education and an indicator for different ethnic identifications. Relationship during the pregnancy is assessed using two indicators of problematic quality: The mother did not tell the father the day she found out she was pregnant (reported by the mother), and the father did not discuss the pregnancy with the mother (reported by the father). A measure of relationship happiness at the time of the interview is used for models predicting future intentions. This is constructed of questions asking each partner whether they are very happy, somewhat happy, or not very happy in their relationship. Using responses of 'very happy,' couples were grouped into categories of both happy, mother only happy, father only happy, and neither happy. Father's selfreported wantedness/timing is coded as for the mother; a behavioral measure is not available for fathers.

Mother, father, and relationship characteristics had very little missing data. Most had fewer than 10 cases missing the item, and the largest was 192 (2%) missing number of mother's biological children. These missing items were imputed using PROC MI in SAS. Weights are used to correct for initial sample selection.

*Millennium Cohort*. Ambivalence is assessed as incongruence between behaviors and emotions using the Millennium Cohort Study (MCS). The MCS is a national survey of all four countries of the United Kingdom, representing a random sampling of the families of children born in the year 2000. As in the ECLS-B, face-to-face interviews with mothers were completed when the focal child was about nine months old, and interviews were also completed with coresident fathers. In the MCS, 18,502 biological mothers completed an interview, and of these, 17,576 (95%) completed all pregnancy intention items. Of the mother respondents, 14,296 had biological fathers coresident, and 12,521 of these fathers (88%) completed a survey. These 12,521 surveyed coresident couples form the sample for the fourth objective.

In the MCS, mothers were asked whether or not they were planning to become pregnant, representing their behavioral intentions. Their answers were used to create two categories: 1) Planned ; and 2) Unplanned. Their emotions were assessed through a standard question asking their level of happiness upon learning that they were pregnant, with possible responses including very happy, happy, not bothered either way, unhappy, and very unhappy. These responses were used to create three categories: 1) Happy; 2) Neutral; and 3) Unhappy. Table 2 presents congruent and incongruent combinations of emotions and behaviors in MCS; incongruent combinations are highlighted and labeled Ambivalent.

Table 2: MCS Pregnancy Classification

Mother characteristics include her age, education, ethnicity, employment, parity, and relationship status. Mother's age and years of education are continuous variables. Ethnicity is coded as four categories, White, Asian, Black, and Other/Mixed. It should be noted that, unlike in the US, Black respondents are typically of Caribbean origin and Asian are typically of Indian and Bangladeshi origin. Employment is a dichotomous variable recording whether the mother was employed at any time during the pregnancy. Current employment is used for models predicting future intentions, and is coded as employed if the mother is currently in a paid job or on leave from a paid job, and not employed if the mother is not currently in or on leave from a paid job. Parity is measured dichotomously as either her first child or not. Relationship status is coded as no resident partner, coresident unmarried partner, and coresident married partner. The mother's future fertility intentions are measured by an item asking if she intends to have more children. This variable was coded yes if the response was yes or currently pregnant, and no if the response was no or not sure.

Analyses of coresident couples include characteristics of the father and the relationship. Father characteristics are included using variables indicating absolute difference in age and years of education and an indicator for different ethnic identifications. Employment during pregnancy used a question asking fathers if they were employed at the time their partner became pregnant; couples were categorized into those where both partners were employed, father only was employed, and father was not employed (regardless of mother's employment status). Current employment uses the same measure as for mothers, and is used for models predicting future intentions. A measure of relationship happiness at the time of the interview is used for models predicting future intentions. Happiness was reported on a 7-point scale, and approximately half of mothers and fathers gave a response of 6 or 7, the highest levels of happiness. As with the ECLS-B couples were grouped into categories of both happy, mother only happy, father only happy, and neither happy. The MCS survey does not contain any questions that could indicate relationship quality during the pregnancy, nor does it ask the father about his intentions for the pregnancy. There was a very low level of missing data, most for employment with 18 (<.01%) missing, and missing items were imputed using PROC MI in SAS. Weights are used to correct for initial sample selection.

#### Results

## **Objective 1: Prevalence of Ambivalence**

When ambivalent categories are created, Table 3 illustrates that, in both samples, about one third of mothers were ambivalent about their intentions for pregnancy. When measured as incongruity between behaviors and cognitions in ECLS-B or incongruity between behaviors and emotions in MCS, a substantial number of mothers demonstrate ambivalence. This provides a strong indication that conceptualization of pregnancy intention using only one dimension may be oversimplifying women's experience of pregnancy. The finding confirms prior research indicating that ambivalence is a meaningful construct for many women (i.e. Edin & Kefalas, 2005; Higgins, Hirsch, & Trussell, 2008; McQuillan, Greil, & Schreffler, 2010; Zabin, 1999). Separating out ambivalence also gives a clearer picture of intended and unintended pregnancies. For both samples, around half of pregnancies are clearly intended, and about one-tenth are definitely unintended. The use of multiple measures offers the potential for a more accurate categorization of pregnancies in studies using standard measurement of intentions.

#### Table 3: Percentage of Mothers Classified with Ambivalent Pregnancy Intentions

For the standard measure of cognitions which categorizes intention into wanted and on time, wanted but too soon, and unwanted, a substantial number of each category is called into question with the addition of the behavioral measure of contraceptive use. Of the women who report wanted and on-time pregnancies, 22% may be ambivalent, as opposed to unambiguously intending the pregnancy. Of women who report pregnancies which are wanted but too soon, 72% appear to be ambivalent, as opposed to unambiguously not intending the pregnancy unwanted at any time, 65% may be ambivalent rather than unambiguously not intending the pregnancy. Even when considering only partnered women, these proportions are almost identical (21%, 73%, and 66%, respectively). Thus, standard measures of intention which only use questions about wantedness and timing may be obscuring ambivalence to a large extent.

Questions about trying and happiness are also not as clear-cut as they seem. Of those women who reported trying to become pregnant, 2% were less than happy, an ambivalent response. Of those who reported that the pregnancy was a surprise, 77% were happy or neutral, also an ambivalent response. Particularly for surprise pregnancies, it appears that additional information about intention is necessary to understand its meaning.

### Partners and Ambivalence

Partners do not always share intentions for pregnancy. Fathers in the ECLS-B were asked the same attitudinal wantedness/timing questions as mothers. When only these questions are considered for partnered respondents, 49% of fathers and mothers give concordant responses. Of mothers with on-time pregnancies, 65% of partners were in agreement, for too late 45% were in agreement, for too early 56% were in agreement, and for unwanted 16% were in agreement. When mothers' behavioral intentions are included, 31% of the concordant couples have ambivalent mothers. When both partners reported an on-time pregnancy, 17% of the mothers were ambivalent; when both reported a too-soon pregnancy, 70% of the mothers were ambivalent, and when both reported an unwanted pregnancy, 62% of the mothers were ambivalent. Thus, partner agreement is even less prevalent when ambivalence is taken into account.

## *Objective 2: Mother Characteristics Associated with Ambivalence* ECLS-B

Bivariate analyses for the ECLS-B are presented in Table 4, and compare mothers who are ambivalent about their pregnancy with mothers who either unambiguously intended or unambiguously did not intend the pregnancy. Mothers who appear ambivalent about their pregnancy differ from mothers who unambiguously intend their pregnancy in every characteristic measured. Ambivalent mothers are younger, have less education, and are to a greater extent minority ethnicity. Fewer are employed, and fewer are having their first child. More have no coresident partner or an unmarried coresident partner, and fewer are married. Ambivalent mothers also differ in several important ways from mothers who unambiguously did not intend their pregnancies. Fewer have no coresident partner, more have an unmarried coresident partner, and more are married. Also, fewer report ethnicity as Black, and more report Hispanic. In the ECLS-B, ambivalent mothers are distinct from those with intended pregnancies but share some similarities with mothers who have unintended pregnancies.

Table 4: Intentions and Mother Characteristics in ECLS-B

## MCS

Bivariate analyses for the MCS are presented in Table 5. As with mothers in the ECLS-B, mothers who are ambivalent about their pregnancy differ from mothers who unambiguously intend their pregnancy in every characteristic measured. Ambivalent mothers are younger, have less education, and are less often white. Fewer are employed, and fewer are having their first child. More have no coresident partner or an unmarried coresident partner, and fewer are married. Ambivalent mothers also differ in almost every way from mothers who unambiguously did not intend their pregnancies, demonstrating a more distinct pattern than in the ECLS-B. Compared to those who did not intend their pregnancy, ambivalent mothers are older and have more education. They are less likely to be white, more likely to be employed, and more likely to be having their first child. Fewer have no coresident partner, more have an unmarried coresident partner, and more are married. Thus, in the MCS, ambivalent mothers appear to comprise a group entirely distinct from mothers who unambiguously did or did not intend their pregnancies, in most cases falling between these two unambiguous groups.

Table 5: Intentions and Mother Characteristics in MCS

#### Predictors of Ambivalence

The likelihood of being ambivalent is compared to that of having an unambiguously intended or unintended pregnancy using multinomial logistic regressions, as detailed in Table 6 for ECLS-B mothers and Table 7 for MCS mothers. Overall, mothers who are ambivalent are distinct from each of the other groups of mothers. Mothers with a first child and those with coresident partners are more likely to have unambiguously intended their pregnancy, and least

likely to have unambiguously not intended it, with ambivalent falling in between. Ambivalent mothers are between intended and unintended in their education and, in the MCS, in age as well. Ambivalent mothers are more likely than any other mothers to be of a minority ethnicity and, in the ECLS-B, to be younger. They are also less likely than any other mothers to have been employed prior to the birth (MCS only).

# Table 6: ECLS-B Predictors of Ambivalent Pregnancies, Compared with Intended and Unintended Pregnancies, for All Mothers Table 7: MCS Predictors of Ambivalent Pregnancies, Compared with Intended and Unintended Pregnancies, for All Mothers

## **Objective 3: Effects of Ambivalence on Future Childbearing Intentions**

Ambivalent intentions for the prior pregnancy are a key factor in intentions for future childbearing, as indicated by the logistic regression models in Table 8. Patterns were remarkably similar across the ECLS-B and MCS mothers, with ethnicity the only exception. Compared to mothers with ambivalent intentions, those with intended pregnancies are significantly more likely to want additional children, and those with unintended pregnancies are significantly less likely to want additional children. Not surprisingly, the strongest predictor of wanting additional children was number of prior children, with first-time mothers 9 times more likely to say that they want additional children. Mothers who were younger and who had more education were more likely to want additional children, and mothers with no coresident partners were less likely to want additional children.

Table 8: Intentions for Additional Children for All Mothers

Mothers in the MCS were given the option of an ambiguous response to intentions for additional children (coded as no additional children for the analysis above). A multinomial logistic regression compared this ambiguous response with either an unambiguously positive or unambiguously negative intention for additional children (analysis not shown). It found that mothers with an ambiguously intended pregnancy had chances of having ambiguous future intentions as well, when compared with intending another child, which were nearly one-quarter higher than those with intended pregnancies but which were no different from those with unintended pregnancies. When compared with *not* intending another child, mothers with ambiguous pregnancy intentions were a third less likely than those with intended pregnancies and nearly twice as likely as those with unintended pregnancies to have ambiguous intentions for another child. These results clearly follow the pattern of mothers with ambiguous intentions falling between those with unambiguous intentions, yet slightly less differentiated from those with unintended pregnancies.

## **Objective 4: Couple Analysis of Ambivalence**

The final objective focuses on women with coresident partners, allowing for the investigation of the association between relationship characteristics and ambivalence. Relationship quality differed between the three groups for both the ECLS-B and the MCS couples. In both cases, those with intended pregnancies had the most couples where both partners were happy with the relationship. Those with unintended pregnancies had the least number of couples where both partners were happy, and those with ambivalently intended pregnancies fell in between. For MCS couples where both partners were unhappy, those with ambivalent pregnancies also fell in between the other two groups. However, the number of both-unhappy couples in ECLS-B was no different for those with ambivalent pregnancies and those with unintended pregnancies. Relationship happiness and other relationship characteristics are detailed in Table 9 for ECLS-B and Table 10 for MCS.

Table 9: Intentions and Relationship Characteristics in ECLS-BTable 10: Intentions and Relationship Characteristics in MCS

Predictors of ambivalence were analyzed in both studies for women with coresident partners, with results presented in Tables 11 and 12. For partnered women, the greatest distinction was between ambivalent and intended. The quality of the relationship at the beginning of the pregnancy was relevant, as the ECLS-B analysis shows (this information was not available in the MCS). Ambivalent mothers were more likely to have waited before telling their partner they were pregnant, and their partner was more likely to have avoided discussing the pregnancy. Compared to mothers with an intended pregnancy, ambiguous couples were less happy with their relationship, were not both employed, and were unmarried. Ambivalent partnered mothers were younger, had less education, were minority ethnicity, and already had at least one child, when compared with partnered mothers who intended their pregnancy.

Ambivalent pregnancies were distinct from both intended and unintended only in marital status (ECLS-B only) and parity (MCS only). Unmarried mothers with a coresident partner were more likely than married mothers to have either ambivalent or unintended pregnancies. Mothers who were having their first child were more likely to have an intended and less likely to have an unintended pregnancy, with ambivalent in between.

 Table 11: ECLS-B Predictors of Ambivalent Pregnancies, Compared with Intended and

 Unintended Pregnancies, for Partnered Mothers

 Table 12: MCS Predictors of Ambivalent Pregnancies, Compared with Intended and Unintended

 Pregnancies, for Partnered Mothers

Partnered mothers' intentions for additional childbearing are presented in Table 13. Again, results are remarkably consistent across the two datasets. Compared to partnered mothers with ambivalent intentions, those with intended pregnancies are significantly more likely to want additional children, and those with unintended pregnancies are significantly less likely to want additional children. Partnered mothers with only one child are 11 times more likely to want another child than mothers with more than one child. The quality of the relationship was also a relevant factor for future intentions. For partnered mothers, those where both partners were unhappy with the relationship (ECLS-B and MCS) and those where the mother was unhappy (MCS only) were less likely to want additional children.

Table 13: Intentions for Additional Children for Partnered Mothers

#### Discussion

Just over one-third of all mothers may be ambivalent about their pregnancy, neither fully intending it or not. When mothers' behaviors are compared with their cognitions and emotions, incongruence can be measured as ambivalence. About the same proportion of ambivalent pregnancies was found using two measurements in two separate studies, suggesting that this is tapping into a substantial underlying construct. The high numbers of ambivalent mothers also reflects prior research indicating that the experience of pregnancy intention is complex and multidimensional (Edin & Kefalas, 2005; Higgins, Hirsch, & Trussell, 2008; McQuillan, Greil, & Schreffler, 2010; Zabin, 1999).

The characteristics of mothers with ambivalent intentions differ substantially from those of both mothers with intended pregnancies and mothers with unintended pregnancies. Ambivalent mothers were more likely to be having their first child, in a relationship, and employed during their pregnancy than mothers with intended pregnancies, but less than mothers with unintended pregnancies. By contrast, it appears that older, more educated white mothers have clearer intentions one way or the other, and are less prone to ambivalence.

Ambivalent mothers with coresident partners are distinct from partnered mothers with intended pregnancies. Partnered ambivalent mothers, however, are similar in most ways to mothers with unintended pregnancies. This suggests that prior research which has not distinguished ambiguity and which has focused on partnered mothers has probably not gravely misrepresented unintended pregnancies.

The entry into childbearing is a major transition point, and might be expected to provoke feelings of ambivalence. However, this research indicates that women are clearest and least ambivalent about their intentions for a first child. When mothers are considering their wishes for additional children, their intentions for the preceding pregnancy are highly relevant. Mothers with ambiguous intentions are less likely to want additional children than mothers with intended pregnancies, and more likely to want additional children than mothers with unintended pregnancies.

Mothers appear to take their partner into account when considering their fertility intentions. Those with more problematic relationships are more likely to be ambivalent about

their pregnancy, and mothers are less likely to want more children if the relationship is not happy, particularly if both partners are unhappy.

The principle limitation of this study is that it was not able to measure behavioral, cognitive, and emotional intentions together. Using all three of these aspects of pregnancy intention in conjunction would create the strongest measure of ambivalence. However, the striking similarity in prevalence and patterns between the studies using the two different sets of intention questions suggests that using two of the three concepts may be sufficient to effectively measure ambivalence.

Ambiguous intentions for pregnancy appear to be a distinct and measureable state. Interviews and surveys specifically asking about ambivalence have established that for many women, intentions for pregnancy are unclear even to themselves. This study extends this by finding that ambivalent intentions can be captured the incongruence between multiple standard measures of intention. This multidimensional measurement is a relatively straightforward method to allow for a more nuanced and accurate assessment of women's intention, and this opportunity should be taken advantage of by all researchers interested in pregnancy intention.

## Tables

	Behavior					
Attitude	Planning for	Not planning	Planning against			
On time	Intended	Ambivalent	Ambivalent			
Too soon	Ambivalent	Ambivalent	Unintended			
Too late	Intended	Intended	Unintended			
Unwanted	1	Ambivalent	Unintended			

## Table 1: ECLS-B Pregnancy Classification

<sup>1</sup>This category is uncoded as no women reported both an unwanted and planned pregnancy.

## Table 2: MCS Pregnancy Classification

	Behavior						
Emotion	Planning for	Not planning for					
Нарру	Intended	Ambivalent					
Neutral	Ambivalent	Ambivalent					
Unhappy	Ambivalent	Unintended					

Table 3: Percentage of Mothers Classified with Ambivalent Pregnancy Intentions

	ECLS-B		MC	S
	n	%	n	%
Ambivalent	3,770	39	6,661	34
Intended	3,799	48	9,814	57
Unintended	1,341	13	1,934	10

Note: 8,910 mothers in ECLS-B 9-month sample; 17,576 mothers in MCS 9-month sample; shown is unweighted *n* and weighted percentage.

	Total	Ambivalent	Intended	Unintended	Differences
Age, mean years	27.38	25.69	29.71	25.54	A, U < I
(SD)	(6.31)	(6.15)	(5.62)	(6.46)	
Education, mean	11.38	10.77	12.16	10.91	A, U < I
years (SD)	(2.39)	(2.34)	(2.23)	(2.33)	
Ethnicity %					
White	61	52	72	52	A, U < I
Black	12	17	7	21	I < U < A
Hispanic	23	28	20	24	I < A < U
Asian	3	3	2	3	I < A, U
Employed	73	72	75	73	A< I
during					
pregnancy <sup>1</sup> %					
Currently	53	50	55	56	
employed <sup>1</sup> %					
First child %	39	38	41	40	A< I
Relationship %					
No partner	13	19	4	27	I < A < U
Unmarried	14	21	7	19	I < U < A
Married	74	7	89	4	U < A < I
%		39	48	13	

Table 4: Intentions and Mother Characteristics in ECLS-B

<sup>1</sup>Employment during pregnancy is used in the model predicting ambiguity; current employment is used in the model predicting intentions for additional childbearing.

Note: 8,910 mothers in the ECLS-B sample; 3,770 ambivalent, 3,799 intended, and 1,341 unintended. Results are weighted. Differences are tested using either *t*-tests or chi-square tests; differences with significance of p<.05 are reported.

	Total	Ambivalent	Intended	Unintended	Differences
Age mean years	29.18	27.73	30.61	27.02	$\frac{I < A < II}{I = 0}$
(SD)	(5.93)	(6 35)	(5.03)	(6.73)	
(SD) Education mean	(3.75) 11 42	10.03	(3.03)	10.65	
	(2, 42)	(2, 19)	(2.57)	(1.04)	I < A < 0
years (SD)	(2.43)	(2.18)	(2.57)	(1.94)	
Ethnicity %					
White	87	84	88	87	A < U, I
Asian	6	7	6	5	A < U, I
Black	3	4	2	5	I < A, U
Other	4	4	4	3	U < A, I
Employed	67	59	74	56	U < A < I
during					
pregnancy <sup>1</sup> %					
Currently	51	43	58	39	U < A < I
employed <sup>1</sup> %					
First child %	42	44	42	37	U < A < I
Relationship %					
No partner	14	24	4	40	I < A < U
Unmarried	25	33	19	29	I < U < A
Married	61	42	77	31	U < A < I
%		38	54	8	

Table 5: Intentions and Mother Characteristics in MCS

<sup>1</sup>Employment during pregnancy is used in the model predicting ambiguity; current employment is used in the model predicting intentions for additional childbearing.

Note: 17,576 mothers in the MCS sample; 6,335 ambivalent, 9,355 intended, and 1,886 unintended. Results are weighted. Differences are tested using either *t*-tests or chi-square tests; differences with significance of p<.05 are reported.

	Ambi	ivalent	vs. Inter	nded	Ambiy	valent	vs. Unint	ended
	Coefficient		SE	Odds ratio	Coefficient		SE	<b>Odds ratio</b>
Age	-0.07	***	0.00	0.93	0.01		0.01	1.01
Education	-0.09	***	0.01	0.92	-0.05	**	0.02	0.95
Ethnicity								
White (reference)								
Black	0.64	***	0.08	1.89	0.17	*	0.09	1.19
Hispanic	0.47	***	0.06	1.61	0.26	**	0.08	1.30
Asian	0.64	***	0.11	1.90	0.31	*	0.13	1.37
Employed	0.02		0.06	1.02	0.04		0.07	1.04
First child	-0.31	***	0.06	0.74	0.01		0.07	1.01
Relationship								
No partner (reference)								
Unmarried	-0.44	***	0.10	0.65	0.34	***	0.09	1.41
Married	-1.36	***	0.08	0.26	0.24	**	0.10	1.27
Intercept	3.68	***	0.17	39.71	1.05	***	0.20	2.87

Table 6: ECLS-B Predictors of Ambivalent Pregnancies, Compared with Intended and Unintended Pregnancies, for All Mothers

Note: 8,910 mothers in ECLS-B 9-month sample Likelihood ratio chi-square for total model = 5319.98 (500df) p<.0001

	Ambi	ivalent	vs. Inter	nded	Ambi	valent	vs. Unint	ended
	Coefficient		SE	Odds ratio	Coefficient		SE	<b>Odds ratio</b>
Age	-0.04	***	0.00	0.96	0.01	**	0.01	1.01
Education	-0.08	***	0.01	0.93	0.02		0.01	1.02
Ethnicity								
White (reference)								
Black	0.62	***	0.10	1.86	0.25	*	0.12	1.28
Asian	0.44	***	0.06	1.55	0.38	***	0.11	1.46
Other	0.26	***	0.09	1.30	0.34	*	0.15	1.40
Employed	-0.31	***	0.04	0.73	-0.12	*	0.06	0.89
First child	-0.12	**	0.04	0.89	0.47	***	0.07	1.61
Relationship								
No partner (reference)								
Unmarried	-0.96	***	0.06	0.38	0.70	***	0.07	2.02
Married	-1.99	***	0.06	0.14	0.86	***	0.07	2.37
Intercept	3.23	***	0.13		-0.04		0.19	

Table 7: MCS Predictors of Ambivalent Pregnancies, Compared with Intended and Unintended Pregnancies, for All Mothers

Note: 17,576 mothers in MCS 9-month sample Likelihood ratio chi-square for total model = 6002.39 (500df) p<.0001

		EC	LS-B			M	CS	
	Coefficient		SE	Odds ratio	Coefficient		SE	Odds ratio
Intentions for pregnancy								
Ambiguous (reference)								
Intended	0.29	***	0.06	1.33	0.46	***	0.05	1.59
Unintended	-0.38	***	0.07	0.68	-0.53	***	0.07	0.59
Age	-0.05	***	0.00	0.95	-0.08	***	0.00	0.92
Education	0.07	***	0.01	1.07	0.09	***	0.01	1.10
Ethnicity								
White (reference)								
Black	-0.35	***	0.08	0.71	0.52	***	0.11	1.68
Asian	0.15		0.10	1.16	0.20	**	0.07	1.22
Hispanic/Other <sup>1</sup>	0.05		0.06	1.05	0.21	**	0.09	1.23
Employed	-0.01		0.05	0.99	-0.02		0.04	0.98
First child	2.21	***	0.06	9.08	2.21	***	0.04	9.09
Relationship								
No partner (reference)								
Unmarried	0.42	***	0.09	1.52	0.99	***	0.06	2.70
Married	0.27	***	0.08	1.31	1.13	***	0.07	3.08
Intercept	0.09		0.16		-1.41	***	0.13	

Table 8: Intentions for Additional Children for All Mothers.

<sup>1</sup>Coefficient indicates *Hispanic* ethnicity for ECLS-B and *Other* ethnicity for MCS

Note: 8,910 mothers in ECLS-B 9-month sample and 17,576 mothers in the MCS 9-month sample ECLS-B likelihood ratio chi-square = 2247.84 (11df) p<.0001 MCS likelihood ratio chi-square = 5764.61 (11df) p<.0001

	Total	Ambivalent	Intended	Unintended	Differences
Age difference, mean years	3.99	4.21	3.86	3.97	I < A
(SD)	(3.11)	(3.26)	(3.04)	(2.95)	
Education difference, mean	1.24	1.35	1.15	1.38	I < A, U
years (SD)	(1.61)	(1.62)	(1.58)	(1.62)	
Different ethnicity %	16	14	9	13	I < A, U
During Pregnancy <sup>1</sup>					
Relationship Problems %					
Mother did not tell	6	8	5	8	I < A, U
Father did not discuss	7	10	6	8	I < A, U
<i>Current</i> <sup>1</sup>					
Employment %					
Both	49	44	52	52	A < I, U
Father only	42	45	42	37	A, U < I
Father not employed	9	11	7	11	I < A, U
Relationship Happiness%					
Both happy	62	55	68	52	I < A < U
Mother only	15	14	14	21	U< A, I
Father only	8	10	7	8	I, U < A
Neither happy	15	21	11	20	I < A, U
Father's attitude %					
On time	49	37	62	22	U < A < I
Too soon	21	33	9	39	I < A < U
Too late	9	5	12	6	U < A < I
Unwanted	22	26	17	34	I < A < U
%		36	53	11	

Table 9: Intentions and Relationship Characteristics in ECLS-B

<sup>1</sup>Characteristics during pregnancy are used in the models predicting ambiguity; current characteristics are used in the models predicting intentions for additional childbearing.

Note: 5,469 mothers with coresident partners in the ECLS-B 9-month sample; 1,922 ambivalent, 2,909 intended, and 638 unintended. Results are weighted. Differences are tested using either *t*-tests or chi-square tests; differences with significance of p<.05 are reported.

	Total	Ambivalent	Intended	Unintended	Differences
Age difference, mean years	3.91	4.28	3.76	4.09	I < U
(SD)	(3.81)	(4.03)	(3.69)	(4.06)	
Education difference, mean	1.77	1.86	1.89	1.80	
years (SD)	(1.93)	(1.82)	(1.90)	(1.72)	
Different ethnicity %	6	38	18	51	I < A < U
During pregnancy <sup>1</sup>					
Employment %					
Both	70	55	72	52	A, U < I
Father only	23	32	23	34	I < A, U
Father not employed	7	13	5	15	I < A, U
<i>Current</i> <sup>1</sup>					
Employment %					
Both	54	39	55	34	U < A < I
Father only	39	41	37	44	I < A < U
Father not employed	9	20	8	21	I < A, U
Relationship happiness %					
Both happy	49	35	49	24	U < A < I
Mother only	17	20	19	17	U < A, I
Father only	16	17	16	19	I < A < U
Neither happy	17	29	16	40	I < A < U
%					

Table 10: Intentions and Relationship Characteristics in MCS

<sup>1</sup>Characteristics during pregnancy are used in the models predicting ambiguity; current characteristics are used in the models predicting intentions for additional childbearing.

Note: 12,521 mothers with coresident partners in the MCS 9-month sample; 3,857 ambivalent, 7,803 intended, and 861unintended. Results are weighted. Differences are tested using either *t*-tests or chi-square tests; differences wih significance of p<.05 are reported.

Table 11: ECLS-B Predictors of Ambivalent Pregnancies,	Compared with	Intended and	Unintended	Pregnancies,	for Partnered
Mothers					

	Ambi	ivalent	vs. Inter	nded	Ambiy	valent	vs. Unint	ended
	Coefficient		SE	Odds ratio	Coefficient		SE	<b>Odds</b> ratio
Age								
Mother	-0.07	***	0.01	0.93	-0.01		0.01	0.99
Difference	0.01		0.01	1.01	0.02		0.01	1.02
Education								
Mother	-0.07	***	0.02	0.93	-0.03		0.02	0.97
Difference	0.01		0.02	1.01	-0.02		0.03	0.98
Ethnicity								
White (reference)								
Black	0.73	***	0.12	2.08	0.10		0.16	1.11
Hispanic	0.46	***	0.07	1.59	0.10		0.11	1.10
Asian	0.56	***	0.14	1.76	0.32		0.19	1.38
Different ethnicity	0.11		0.09	1.12	-0.08		0.13	0.92
Employed	0.01		0.07	1.01	0.01		0.11	1.01
First child	-0.30	***	0.07	0.74	0.01		0.10	1.01
Relationship								
Married (reference)								
Unmarried	0.85	***	0.10	2.34	-0.24	*	0.12	0.79
Relationship problems								
Mother did not tell	0.54	***	0.13	1.72	-0.15		0.16	0.86
Father did not discuss	0.27	*	0.13	1.32	0.09		0.17	1.10
Intercept	2.19	***	0.24		1.47	***	0.34	

Note: 5,469 mothers with coresident partners in the ECLS-B 9-month sample Likelihood ratio chi-square for total model = 8776.22 (900df) p<.1

	Ambivalent vs. Intended				Ambivalent vs. Unintended			
	Coefficient		SE	Odds ratio	Coefficient		SE	Odds ratio
Age								
Mother	-0.03	***	0.00	0.97	0.00		0.01	1.00
Difference	0.01		0.01	1.01	0.01		0.01	1.01
Education								
Mother	-0.08	***	0.01	0.92	0.02		0.02	1.02
Difference	0.01		0.01	1.01	-0.01		0.02	0.99
Ethnicity								
White (reference)								
Black	0.45	**	0.15	1.56	-0.13		0.25	0.88
Asian	0.57	***	0.07	1.76	0.47	**	0.15	1.60
Other	0.30	**	0.12	1.35	0.30		0.23	1.35
Different ethnicity	0.04		0.10	1.04	-0.17		0.19	0.84
Current employment								
Both (reference)								
Father only	0.27	***	0.05	1.31	0.12		0.10	1.12
Father not employed	0.55	***	0.08	1.73	0.05		0.13	1.05
First child	-0.17	***	0.05	0.85	0.73	***	0.10	2.08
Relationship								
Married (reference)								
Unmarried	1.03	***	0.05	2.80	-0.13		0.09	0.88
Intercept	0.70	***	0.17		1.08	***	0.33	

Table 12: MCS Predictors of Ambivalent Pregnancies, Compared with Intended and Unintended Pregnancies, for Partnered Mothers

Note: 12,521 mothers with coresident partners in the MCS 9-month sample Likelihood ratio chi-square for total model = 15,733 (2000df) p<.1

	ECLS-B				MCS			
	Coefficient		SE	Odds ratio	Coefficient		SE	<b>Odds</b> ratio
Pregnancy intention								
Ambiguous (reference)								
Intended	0.29	***	0.07	1.34	0.47	***	0.05	1.61
Unintended	-0.44	***	0.11	0.64	-0.48	***	0.12	0.62
Age								
Mother	-0.05	***	0.01	0.95	-0.09	***	0.01	0.91
Difference	-0.03	**	0.01	0.97	-0.03	***	0.01	0.97
Education								
Mother	0.05	**	0.02	1.06	0.09	***	0.01	1.09
Difference	-0.01		0.02	0.99	0.04	***	0.01	1.04
Ethnicity								
White (reference)								
Black	-0.28	*	0.12	0.76	0.50	***	0.17	1.65
Asian	-0.12		0.15	0.88	0.15		0.09	1.17
Hispanic/Other <sup>1</sup>	0.04		0.07	1.04	0.10		0.13	1.11
Different ethnicity	0.12		0.09	1.13	0.09		0.11	1.10
Current employment								
Both (reference)								
Father only	0.06		0.07	1.06	0.14	**	0.05	1.14
Father not employed	0.19		0.12	1.21	0.15		0.08	1.16
First child	2.37	***	0.09	10.67	2.41	***	0.05	11.17
Relationship								
Married (reference)								
Unmarried	0.20	*	0.10	1.22	-0.11		0.06	0.90
Relationship happiness								
Both happy (reference)								
Mother only	-0.07		0.09	0.93	-0.12		0.06	0.89

Table 13: Intentions for Additional Children for Partnered Mothers

Father only	-0.15	0.12	0.86	-0.21 ***	0.07	0.81
Neither happy	-0.20 *	0.09	0.82	-0.31 ***	0.07	0.73
Intercept	0.52 *	0.25		0.06	0.19	

<sup>1</sup>Coefficient indicates Hispanic ethnicity for ECLS-B and Other ethnicity for MCS

Note: 8,910 mothers and 5,469 mothers with coresident partners in the ECLS-B 9-month sample ECLS-B likelihood ratio chi-square = 1422.82 (17df) p<.0001 MCS Likelihood ratio chi-square = 4646.33 (17df) p<.0001

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