

A PRELIMINARY INVESTIGATION OF SYNCHRONOUS PREGNANCIES IN WOMEN

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Abstract: Menstrual synchrony is when the menstrual cycles of friends or family members coincide, such that women conform to the same cycle. In this paper, we propose for the existence of synchronous pregnancies, which may be analogous to menstrual synchrony. Menstrual synchrony is a well studied topic, whereas synchronous pregnancies among friends or family members is an overlooked area of investigation. In this exploratory study of 81 pregnant women, we hypothesize that women's pregnancies are synchronized with those of friends or family members. We also examine whether women intentionally plan their pregnancies in accordance with these individuals. Finally, we investigate the sharing of resources among women who have simultaneous pregnancies. Our findings suggest that the pregnancies of women are more synchronized with friends than family members, and often the synchronicity is unplanned. The majority of women indicated that they intend to share resources (including parenting) with others who are pregnant at the same time, or who have recently given birth. Using an evolutionary framework, we propose that the sharing of resources is highly valuable and might represent a reason for women to, albeit inadvertently, have synchronized pregnancies.

Keywords: pregnancy; sharing behavior; mothering; women's sexuality; menstrual synchrony

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The phenomenon that groups of women in close relationships (e.g., sisters, close friends) appear to get or be pregnant simultaneously is an unexplored and potentially unnoticed area of science, despite its implications from both health and medical perspectives. Furthermore, the topic has academic appeal, at least to those in evolutionary psychology, because synchronous pregnancy represents a potentially adaptive behavior for women. Here we investigate the relationships in which synchronous pregnancy occurs and document some of the potential evolutionary bene-

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fits of this phenomenon. We argue that synchronous pregnancy may increase children's survival, and as a result, maximizes women's reproductive success.

There exists only sparse anecdotal evidence of synchronous pregnancies. Casual observation suggests that a small group of friends or family members tend to become pregnant around the same time, despite age differences. In the English language media, only one account has been well documented. Gloucester High School drew international attention when *Time* reported that a group of 17 students had become pregnant in the previous year (KINGSBURY 2008a, b, c). In this report, principal Dr. Joseph Sullivan explained how the school began investigation when girls had returned to the school's health clinic several times for pregnancy testing, and on hearing the results, "some girls seemed more upset when they weren't pregnant than when they were." The school's investigations led to the discovery of a "pregnancy pact;" upon questioning, more than half of the pregnant teens, all under 16 years of age, admitted to planning their pregnancy so they could raise their babies together. One teen went so far as to have sex with a homeless man to get pregnant (KINGSBURY 2008a).

An exhaustive search of the academic literature and mass media records revealed no documentation of synchronous pregnancy prior to the teenage girls at Gloucester. However, we believe that it cannot be a rare occurrence because there is an evolutionary explanation that fits humans, and all mammals, in which postnatal care is primarily the responsibility of the mother. We argue that, while synchronous pregnancy in modern human society may occur as a result of a conscious effort, prior to the current knowledge of female reproductive physiology, synchronous pregnancy may have been aided by menstrual synchrony. As will be reviewed, MCCLINTOCK (1978, 2000) suggested that menstrual synchrony occurs as a result of exposure to women's pheromones, which causes either phase-shift advancements or delays, ultimately resulting in the synchronization of the ovulatory cycles of women in close proximity. The current study takes MCCLINTOCK'S (1971, 1978, 2000) research an additional step and proposes that menstrual synchrony was once the mechanism women used, albeit unconsciously, to coordinate their pregnancies, or at least have overlapping pregnancies. If it is true that naturally fertile populations (such as the Dogon of Mali in West Africa) have only very few menstrual cycles because they spend a substantial portion of their reproductive years either pregnant or lactating hiányzó szöveg, vagy csak a zárójelet a név elé

STRASSMANN (1997, 1999), then it is possible that menstrual synchrony would allow for synchronous pregnancies. Regardless, given that menstrual synchrony occurs, it is possible to speculate that a similar process occurs for pregnancy.

It should be noted that menstrual (and pregnancy) synchrony can negatively impact on women's reproductive success by increasing competition for high quality mates (SCHANK 2004), so the synchronization of menstrual cycles and resultant pregnancies must be sufficiently beneficial to offset any such costs. Indeed, previous research shows that synchronous pregnancies may benefit the mother and child, as close friends and family are more inclined to engage in shared parenting or re-

sources (for a review, see HRDY 2009). Studies of food sharing (GURVEN et al. 2001) and violence (CHAGNON 1979), for example, show that individuals favour close relatives over distant ones, and over non-relatives, for altruistic acts. However, these benefits must outweigh costs such as competition for caloric resources, particularly if one was residing in a community based around subsistent style of living.

Menstrual Synchrony

Menstrual synchrony was first described in humans by MARTHA MCCLINTOCK (1971) in a group of college women living together in a dormitory, and refers to the observation that the menstrual cycles of women who live together tend to become synchronized over time. She proposed that this phenomenon may be influenced by pheromones, which are chemical signals that function in both inter- and intrasexual communication associated with reproduction (WEISSENBÖCKA, SCHWAMMERB and RUF 2009). This conjecture has subsequently been supported (LITTLE et al. 1989; RASMUSSEN and SCHULTE 1998; STERN and MCCLINTOCK 1998; WELLER and WELLER 1992, but see also SCHANK 2000; STRASSMAN 1997, 1999; WILSON 1992; YANG and SCHANK 2006).

Evolutionary Perspectives of Menstrual Synchrony

An extension of menstrual synchrony is estrous synchrony, which is when women undergo the fertile period of the sexual cycle at the same time as other women of the same living group. It is not a uniquely human event, as it has been documented in many mammals including elephants (WEISSENBÖCKA et al. 2009), rodents (HANDELMANN et al. 1980; MCCLINTOCK 1978), chimpanzees, and other primates (FRENCH and STRIBLEY 1985; WALLIS 1985, but see also GATTERMAN et al. 2002; SCHANK 2001a, 2001b).

Several hypotheses have been proposed to explain the evolution of reproductive synchrony in animals, including humans, and we note that some of the explanations fit well with menstrual synchrony, while others are more directly tied to synchronous pregnancies. FIRST, MAYNARD SMITH (1977) suggested that reproductive synchrony decreases the probability of male desertion following fertilization, due to the variable probability of a male finding another mate before his original mate re-enters her reproductive period. Thus, reproductive synchrony encourages monogamy and increases paternal care. Furthermore, ALEXANDER (1975) and REAKA (1976) proposed that reproductive synchrony increases the likelihood of either sex encountering a potential mate, while BERTRAM (1975) suggested that synchronicity decreases the occurrence of intrasexual competition among men, as most women in a particular group would be fertile (however, synchrony can be a detriment if it increases female intrasexual competition for mates; SCHANK 2004). Another potential

benefit proposed by WELLS (1977) is that reproductive synchrony allows all women in a group to enter their reproductive period during a time which is optimal for environmental reasons, such as abundant resources. Similarly, reproductive success could improve due to shared communal feeding and caring of the young (BERTRAM 1975; EMLEN and DEMONG 1975). For example, in group-living lactating animals (e.g., lions), reproductive synchrony results in lactational synchrony, which allows for communal suckling of offspring. In the instance of maternal death, there is a chance that her orphaned offspring would be raised by another female in the group, or in instances of temporary maternal absences (e.g., while on hunting expedition) or sickness, other females could potentially nurse any offspring.

Of particular significance to the current study, FRISCH (1984) suggested that menstrual synchrony would increase the probability of synchronous pregnancy and lactation. This synchrony allows women to engage in allomothering, a system in which mothers engage in shared parenting duties (FAIRBANKS 1990). In this system, mothers whose infant has died or who are capable of nursing two infants could provide for an orphaned infant in addition to her genetic offspring (ZIOMKIEWICZ 2006). FRISCH (1984) suggested that this shared parenting would be an important mechanism for species survival in times when infant and maternal mortality are high. Furthermore, allomothering may reduce infant mortality; in vervet monkeys (*Chlorocebus pygerythrus*) sexually immature females gain valuable parenting experience before reproducing on their own (FAIRBANKS 1990). More recently, HRDY (2009) has made similar arguments for humans, stating that resource sharing among a group is essential to children's survival, particularly since children are dependent, slow-maturing, and relatively large.

RASMUSSEN and SCHULTE (1998) also proposed that estrous synchrony facilitates successful insemination of several women within a single receptive period by the same man. This pattern of behavior may be advantageous because it increases the relatedness of females, potentially resulting in increased reciprocity and cooperation between individuals in a group (AXELROD and HAMILTON 1981). Thus, women are provided with an opportunity to increase their inclusive fitness by helping close relatives (HAMILTON 1964).

Some have proposed that menstrual synchrony may simply be an evolutionary vestige that was adaptive earlier in human history, perhaps during a time when women had limited periods of sexual receptivity (MCCLINTOCK 1978; LOW 1979), or that it is only an artifact of another adaptation (KILTIE 1982; MCCLINTOCK 1981). However, other researchers have countered these arguments and offered additional hypotheses to explain the adaptive function of menstrual synchrony. For example, BURLEY (1979) proposed it evolved in humans as a mechanism for increasing the likelihood of conception among women living in polygamous mating systems (e.g., co-wives). She argued that ovulation is largely concealed in humans, so men may only be able to detect the subtle changes in hormonal states in women with whom they are very familiar (e.g., after a period of cohabitation). While individual hormonal cues may be insignificant, taken together over a period of time, the

rhythmic nature of the menstrual cycle may subconsciously cue men, making them attracted to the ovulating women, whom are maximally fertile. According to MCCLINTOCK'S (1971) finding, the cycles of co-wives could become synchronous, enhancing the collective signal received by men. We note, however, that there have been recent studies that show men are able to detect women's ovulation without much previous exposure (see HASELTON and GILDERSLEEVE, 2011 for a review).

The findings of menstrual synchrony in Bedouin families (WELLER and WELLER 1997) support BURLEY'S (1979) functional explanation for menstrual synchrony. The Bedouin are an ideal population to investigate menstrual synchrony because they typically have large families with women spending the majority of their time together (i.e., all daughters in one family share a common bedroom) and there is minimal hormonal contraceptive use. Among the Bedouin, menstrual synchrony was observed over a period of three years in sister-roommate dyads, sister-roommate/close friend dyads, and among all women in a family. Weller and WELLER (1997) suggested that the adaptive mechanism by which menstrual synchrony is achieved may not operate on a precise enough level to induce synchrony among only co-wives and therefore induces synchrony among all members of a family.

In fact, several researchers have hypothesized that women who are good friends are more likely to synchronize their menstrual cycles than females who are not (e.g., GRAHAM 1991; MCCLINTOCK 1971; WELLER and WELLER 1993). This effect may be due to friendships acting as a proxy for physical closeness and exposure. Researchers have found that there exists a positive linear relationship between frequency of contact and strength of liking (e.g., BELL et al. 1998). Moreover, friendship may actually induce individual changes in physiology (JARETT 1984).

It must be noted that there are criticisms against the menstrual synchrony hypothesis. Much of the criticism surrounding MCCLINTOCK (1971) focuses on her assumption that menstrual cycle length is relatively stable (STRASSMAN 1997; SCHANK 2000). SCHANK (2000) suggests that any findings of menstrual synchrony are the product of methodical and statistical artifacts, not external influences (see also WILSON 1992). Indeed, many studies have failed to find menstrual synchrony in both non-natural (e.g., JARETT 1984; TREVATHAN, BURLESON and GREGORY 1993) and natural fertility populations (STRASSMANN 1997, 1999). Indeed, as STRASSMANN (1997, 1999) reports based on her research among the Dogon women of Mali in West Africa, while menstrual bleeding occurs with some regularity in urbanized societies where methods of contraception are readily available, women in natural fertility populations spend a substantial portion of their reproductive years either pregnant or lactating. Therefore, naturally fertile populations typically have very few menstrual cycles. In light of these criticisms and negative findings, MCCLINTOCK (2000) conceded that ovarian cycle synchrony may be context dependent and that the conditions under which it occurs are largely unknown.

The Current Study

We propose that menstrual synchrony in humans may have evolved as a way of facilitating shared parenting relationships, ultimately outweighing any costs associated with menstrual synchrony. However, we go one step further and hypothesize that an analogous situation occurs for synchronous pregnancies, which may or may not be physiologically independent of menstrual synchrony; we do not attempt to address this latter issue but instead explore the former possibility. Thus, the goal of the current study is to determine whether synchronous pregnancy exists beyond anecdotal evidence and, if so, to investigate how and why it occurs. Specifically, we sought to document the degree to which women are influenced by the pregnancies of friends and family members. Note that we are defining synchronous pregnancies as *being* pregnant at the same time as a friend or family member, not necessarily that *becoming* pregnant was simultaneous. Given that this topic has been neglected by the medical and scientific community, it is exploratory in nature, and hence, the first challenge is to document the phenomenon.

We predict that the majority of pregnant women will report having at least one family member or friend who is pregnant simultaneously or has recently given birth (*Hypothesis 1*). While one could evoke a variety of sociological and psychological theories to explain how the pregnancy of one woman could induce pregnancy in others, we propose the evolutionary paradigm offers a deeper (i.e., “ultimate level”) explanation for synchronous pregnancy.

In addition, we predict that women’s decision to become pregnant will be influenced by the pregnancies of friends and family members, ultimately resulting in synchronized pregnancies (*Hypothesis 2*). We anticipate women will fail to identify group influences for their decision to become pregnant due to social desirability bias. The choice to have a child represents one of the most important decisions women may make in their lifetime, so they may be hesitant to admit that this decision was influenced, even partially, by the pregnancy of others.

As well, we predict that women who are pregnant at the same time will plan to share resources with their pregnant friends and family both prenatally and following birth (*Hypothesis 3*). In our study, we consider resources to be physical support or emotional support; thus, we predict that while physical support in the way of material resources (e.g., baby clothing, bedding, toys) will be cited as a more common form of support, emotional support (e.g., parenting advice) will also be seen as a valuable resource to share.

METHODS

Participants

A total of 81 pregnant women (age, in years, $M = 27.30$, $SD = 4.88$) participated in this study; all were at least 18 years of age. Participants were from various ethnic, educational and socioeconomic backgrounds and geographic areas. As an incentive

for participation, respondents' names were entered into a draw for a \$50 gift card to a store of their choosing.

The majority of the women were Caucasian (92%), Canadian-born (89%), and belonged to a Christian religion (68%). All participants identified themselves as either heterosexual (94%) or bisexual (6%). Only three women indicated that they were no longer in a romantic relationship with the father of their child. Of these, two described an ongoing friendship with their former partners, while the third said the relationship was on "speakable terms, that's it." Of those currently in a romantic relationship with the father, 85% reported being in a married or common law relationship. The remaining respondents were either engaged (10%) or dating (5%). The majority had some level of post-secondary education (84%); five women reported never finishing their high school education.

Approximately 44% of respondents were pregnant with their first child (i.e., pregnant for the first time). Of those who had been pregnant previously, the average number of pregnancies was $M = 2.96$ ($SD = 2.13$, $Md = 2$, range 2 to 16). Eighteen had prior miscarriages ($M = .73$, $SD = .21$, $Md = 0$, range 0 to 14; note that the woman who had 16 previous pregnancies was the same person who reported 14 miscarriages) and nine had prior abortions ($M = .18$, $SD = .39$, $Md = 0$, range 0 to 1).

A total of 65% reported that the pregnancy had been planned. A minority (11%) reported they considered terminating the pregnancy, all of whom had unplanned pregnancies. Only 24% of women had been engaging in some type of contraception (e.g., medical or behavioral) at the time of conception. Thus, although 35% of women had not been planning to conceive, 11% had not undertaken any active measure to prevent pregnancy. Participants were at various stages of gestation; none were at either extreme of pregnancy (i.e., less than 5 weeks or more than 36 weeks) and most clustered around the mid-gestation (approximately 20 weeks).

Measures

Participants completed surveys by e-mail or postal mail. The first survey was demographic in nature, while the second survey consisted of questions regarding obstetrics. The remaining survey addressed whether the participant had any pregnant friends and family members, or friends and family members who had recently given birth. She was asked whether her decision to become pregnant was influenced by the pregnancy of another woman or recent birth, and if it was, to what degree she felt that she had been influenced. She also reported, based on an open-ended question, what sharing of resources she planned to engage in with any friends and family members who were currently pregnant or had recently given birth, if applicable.

Procedures

To disguise the true purpose of the research, the study was advertised as an investigation of support networks available to pregnant women. Posters advertising the study were placed in clinics, hospitals and public areas around Halifax, Canada, and interested women contacted the researcher. Additionally, the social networking tool “Facebook” was utilized to attract a geographically diverse sample, and approximately 80% of the sample was recruited in this manner. Once contacted, the researcher determined whether the women met the minimum age requirement, obtained consent, and sent the surveys to the participant with instructions. Some participants printed off the survey and returned it via postal mail, while others sent it back via e-mail. After returning the completed survey, participants were debriefed and their name was entered into the draw.

RESULTS

Hypothesis 1: Simultaneous Pregnancies and Recent Births

The majority of the women had either friends or family members who were simultaneously pregnant prior to (99%) or after (60%) their own pregnancy, while 93% of women had family members or friends that had given birth in the last 12 months (see *Table 1*).

Table 1. Number (and percent) of pregnant women with a friend(s) and/or family member(s) who were simultaneously pregnant or had recently given birth

	Pregnant before	Pregnant after	Recently given birth (i.e., in last 12 months)
Friend	52 (64%)	36 (44%)	55 (68%)
Family	28 (35%)	13 (16%)	20 (25%)

Fifty-two women (64%) reported having a pregnant friend(s) prior to their own pregnancy; the average number of pregnant friends was $M = 3.62$ ($SD = 3.96$, $Md = 2$, range 1 to 22). Thus, approximately two thirds of our participants were simultaneously pregnant with their friends, such that their friends became pregnant first. A smaller proportion (28; 35%) reported having a pregnant family member(s) prior to their own pregnancy; the average number of pregnant family members was $M = 1.36$ ($SD = 0.73$, $Md = 1$, range 1 to 4).

Thirty-six women (44%) indicated that a friend(s) had become pregnant since they themselves had conceived; the average number of friends was $M = 2.08$ ($SD = 1.89$, $Md = 2$, range 1 to 2). A minority of participants (13; 16%) indicated that a

family member(s) had become pregnant since they themselves had conceived; the average number of family members was $M = 1.08$ ($SD = 0.28$, $Md = 1$, range 1 to 2). Last, 55 women (68%) reported that at least one friend, versus 20 women (55%) reported at least one family member, had given birth within the past 12 months.

Hypothesis 2: Pregnancies Influenced by Pregnancies of Friends and Family

Participants were asked to respond on a Likert-type scale (1 indicating not at all, 5 indicating very much) the degree to which they had been influenced by pregnancy or recent birth by a friend or a family member. Of those who had a pregnant friend prior to their own pregnancy ($n = 52$; 47 answered the item), the average influence rating was $M = 1.47$ ($SD = 1.01$). Of those who had a friend give birth within the 12 months prior to their participation ($n = 55$; 44 answered the item), the average influence rating was $M = 1.36$ ($SD = 0.97$). Of those who had a pregnant family member prior to their own pregnancy ($n = 23$; 20 answered), the average influence rating was $M = 1.30$ ($SD = 0.73$). Last, of those who had a family member give birth in the 12 months period prior to their participation ($n = 19$), the average influence rating was $M = 1.26$ ($SD = 0.65$). Overall, women dismissed the influence of a pregnant, or recently pregnant, friend or family member on their own pregnancy, when directly asked.

Hypothesis 3: Planned Sharing of Resources

As explained below, most women planned to, or were currently, sharing parenting resources (e.g., babysitting, clothing, toys, advice) with their pregnant family and friends, as well as those that had recently given birth.

Sharing resources with pregnant friends. Of the 81 respondents, 22 women did not have any pregnant friends at the time of their participation. An additional four participants left the item in this section blank, four simply stated “no” without further explanation, and two did not elaborate beyond saying “yes.” There were 16 women who indicated that they would not be sharing resources with their pregnant friends, and of these, many indicated that they would have done so given different circumstances. For example, eight women reported living too far away from their friend to easily share resources. One participant explained, “Unfortunately I’m unable to due to distance, but if I wasn’t raising the baby in Europe I am sure that would not be an issue for either of us.” Another woman responded, “I won’t be living in the same province as my friend, I will be in another province and close to more of my family and friends that don’t have children.” Other reasons for not sharing resources with their friends included being pregnant with children of the opposite sex (“No, we don’t plan on sharing resources. I am having a boy and she is hav-

ing a girl.”) and not being in need of anything (“No, this is the second pregnancy for all of us so we have everything!”)

The remaining 33 participants reported they would be sharing resources with their pregnant friend, and the explanations of how they planned to do so varied in specificity. Very general explanations included responses such as “Yes, whatever we need we will help each other out,” “I will share in any way possible,” and “Probably resources.” More elaborate responses often detailed specific items or sharing behaviors. For example, one participant wrote, “Yes, our children will be approximately 3 months apart, so sharing items and babysitting is an absolute for all of us and we are looking forward to that, as well as information sharing.” *Figure 1* shows the most common resources participants listed.

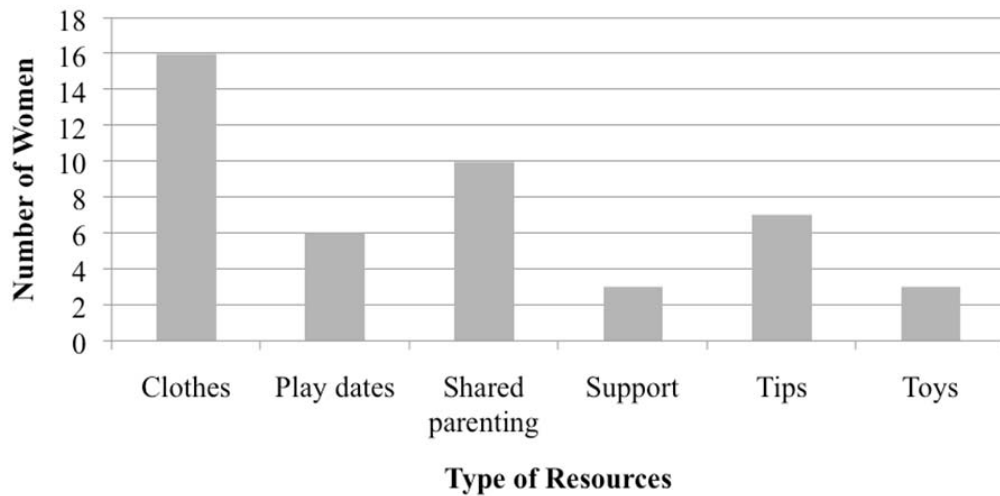


Figure 1. The number of women planning to share particular resources with their pregnant friend(s). Of those women planning on sharing resources ($n = 33$), clothing (both maternity and baby) was the most commonly reported resources. General resources, a category used to encompass vague or unclarified responses (e.g., “baby things,” “baby stuff”), represented the second most popular response among respondents

Sharing resources with friends who have recently given birth. Twenty-six women did not have friends who had given birth in the 12 months prior to their participation. An additional 10 women left the item blank. Eight participants simply stated “no” with no further explanation while one participant did not elaborate beyond her answer of “yes.” The remaining two women who indicated that they would not be sharing resources would indeed do so given other circumstances (i.e., if they were living closer to their friend or if they saw their friend more often).

The remaining 34 participants indicated that they would be sharing resources with their friends who had recently given birth. These participants offered varied re-

sponses discussing everything from the social connection between friends (“We hope to be able to socialize more because we will both have kids”), information sharing, (“She tells me stuff about brands and what’s good, what’s not good”), and sharing of material goods (“She has given me clothes and toys for little boys to help me prepare, as well as a breast pump”); see *Figure 2*.

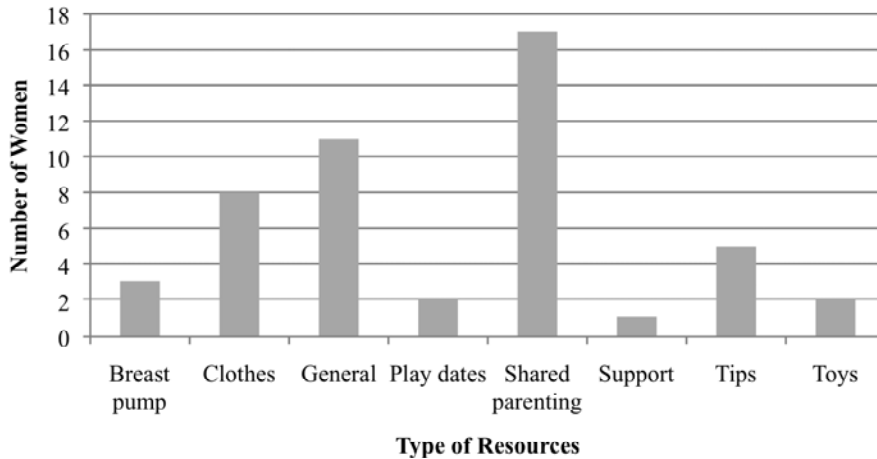


Figure 2. The number of women planning to share particular resources with their friend(s) who had given birth in the last 12 months. Of those women planning on sharing resources ($n = 34$), shared parenting (colloquially, “babysitting”) was the most common response. General resources, a category used to encompass vague or unclarified responses (e.g., “baby things,” “baby stuff”), represented the second most popular response among respondents

Sharing resources with pregnant family members. Of the 81 respondents, 52 women did not have family members pregnant at the time of their participation. Six participants left the item blank, six simply stated “no” with no further explanation, one participant did not elaborate beyond her answer of “yes,” and an additional participant stated that she was “unsure” whether any resource sharing would occur. Four women elaborated on their negative response by saying that they would not be sharing resources with their friend because they lived too far away to share easily. The remaining 11 participants indicated that they would be sharing resources with their pregnant family members. Of these, the majority mentioned a sharing of clothing or other material items; see *Figure 3*.

Sharing resources with family members who have recently given birth. Of the 81 respondents, 61 women did not have family members who had recently given birth. Six participants left the item blank, two simply stated “no,” and one participant did not elaborate beyond her answer of “yes.” Of the 11 participants who indicated that they would be sharing resources with their family members, sharing of

clothing or other material items and engaging in shared parenting were the most commonly listed resources (see *Figure 4*).

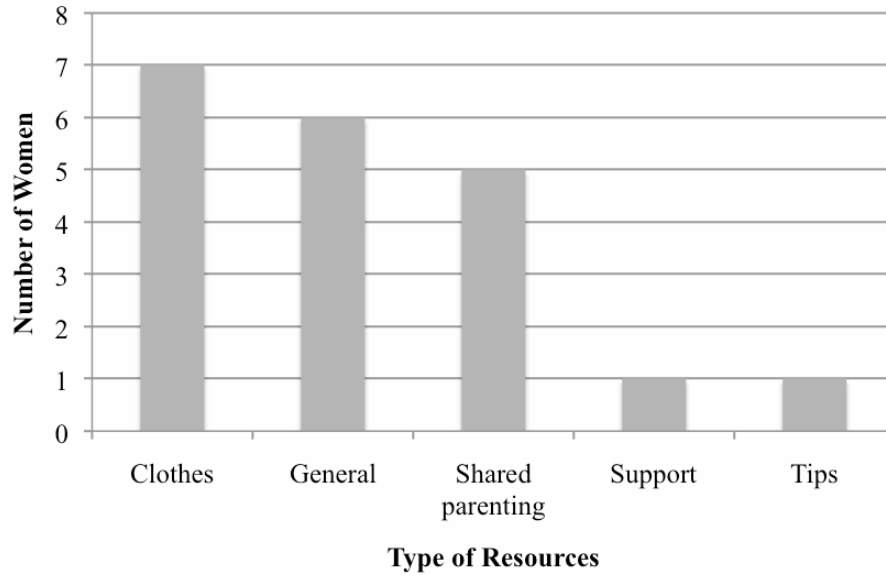


Figure 3. The number of women planning to share particular resources with their pregnant family member. Of those planning to share ($n = 11$), shared clothing was the most common response

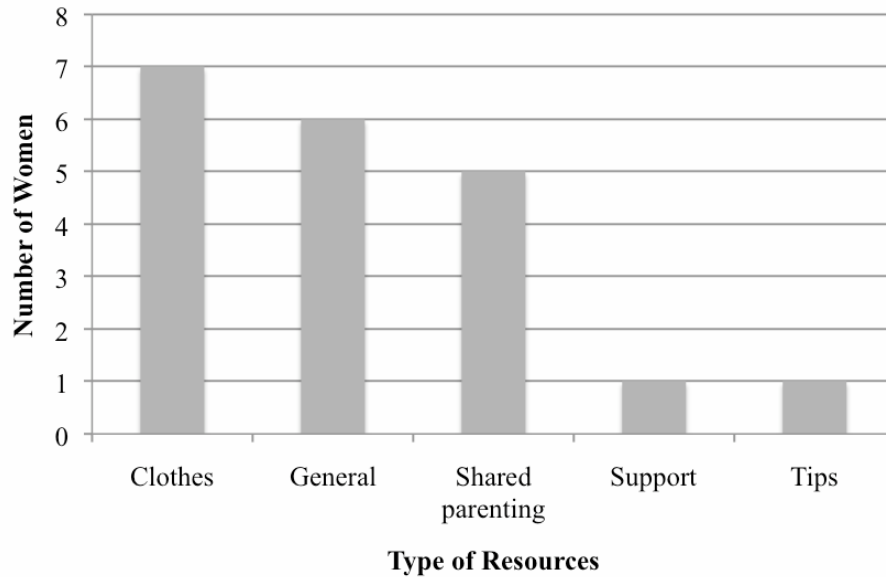


Figure 4. The number of women planning to share particular resources with their family member(s) who had given birth in the 12 months prior to their participation. Of those women planning on sharing resources ($n = 11$), shared clothing was the most common response

DISCUSSION

To the best of our knowledge, the current study is the first examination of synchronous pregnancy. We document that the vast majority of pregnant women have a friend or family member who is either pregnant or has given birth within the last 12 months. This finding suggests the possibility that some women are influenced by the pregnancies of friends and family members. Perhaps the most interesting finding, though, is that the majority of women intended to share resources with their friends and/or family members who were currently or recently pregnant. It is this sharing of resources that represents a direct benefit for women who experience synchronous pregnancies. We note that this finding fits well with the work of others (e.g., HRDY 2009) who have written about the importance of having relatives around to share parenting and material resources. In fact, HRDY (2009) proposes that the sharing of one resource, food, was a pivotal factor in the evolution of families, so that family composition changed and included the presence of relatives (especially older siblings and grandmothers) who would then engage in shared parenting activities.

In every category of synchronous pregnancy examined (i.e., whether one became pregnant before or after a friend or family member, or whether the latter had a recent birth), a greater proportion of participants indicated that they had friends with synchronous pregnancies rather than family members. It could be that one may simply had more friends than family members, and thus, there is a larger pool of people who might be pregnant at the same time. Moreover, whereas one's relatives share one's genes, and by helping relatives, one is indirectly assisting shared genes to continue into future generations, synchronous pregnancy among friends is beneficial as a result of reciprocity. Reciprocity is an altruistic act (e.g., lending of baby clothing) that is later repaid (e.g., an evening of babysitting) by the original recipient of the act. TRIVERS (1971) proposed that whenever the benefit of an altruistic act to the recipient is greater than the cost to the actor, then as long as the help is reciprocated at some later date, both participants will gain. The finding that a greater proportion of women reported planning on sharing resources with their friends than family members suggests that what friends lack in genetic relatedness (and thus, the ability to increase inclusive fitness), they may make up for in altruistic acts, so long as they are reciprocated. Indeed, many of the participants spoke directly to this time of reciprocity when asked about their plans to share resources with their pregnant friends:

Yes, with my boy I had a friend who would bring me all her bigger clothes and I passed everything back to her when my boy outgrew it, for her boy. Then she saved it up again because we knew I wanted one more.

Other participants discussed not only sharing material resources, but also the exchange of childcare with their friends:

Yes, I have received clothes for my children from friends, and passed along clothes that are no longer needed to friends. We will watch each other's children at

times, and I will continue to babysit other friend's children, and have friends babysit mine as well.

The finding that women exhibited more synchronicity with their friends than family may also be an artifact of age; it is likely that women will have more friends of a similar (i.e., childbearing) age group than family members. This difference in numbers alone may explain the greater proportion of participants with pregnant friends than pregnant family members. Future research should attempt to tease apart the effect of age, perhaps by getting participants to estimate their total number of female friends and family members at reproductive age and using a proportion of pregnant friends and family members rather than absolute value. Another strategy would be to have a quasi-control group to examine the extent of synchronous pregnancy; for example, one could examine rates of pregnancy among friends and family members for individuals who are not currently themselves pregnant and see how those rates relate to our findings. To be maximally meaningful, such a control group would need to be matched for characteristics such as socio-economic status, education and age, for example, to rule out the potential of these variables to serve as confounding factors.

Another issue that warrants attention is the timing of women's participation in studies on synchronous pregnancies. For example, a woman may have less pregnant friends at four weeks gestation than she would at four months gestation, due to the passage of time. Another problem arises when examining whether individuals are consciously influenced by the pregnancy of others. To accurately measure this influence, researchers would ideally question women immediately before and after they find out about the pregnancies of others, but the obstacles to this approach are considerable.

Due to ethical constraints, we were unable to include pregnant women under the age of 18. This issue represents a considerable limitation, as there is indirect evidence that adolescents are a demographic **missing word!** who are most likely to experience planned, synchronous pregnancies, such as seen in the Gloucester teens. The issue of age is important for the present study when one considers research on peer pressure. Conformity to peer pressure increases as individuals enter adolescence, peaks during middle adolescence, and declines thereafter (ELLIOTT 2001). Our finding that only a minority of women acknowledge that they were influenced by pregnancy of a friend or family member may be explained, at least in part, by the age of the participants, who were all over 18 years old. Sociological explanations aside, from an evolutionary perspective, younger women and adolescents may benefit more than their older counterparts from synchronous pregnancy and the subsequent sharing of resources. Adolescents are presumably less prepared financially and emotionally to become parents than most women in their twenties and thirties. Therefore, future research should focus on a younger population of pregnant women.

Alternatively, given that the decision to become a parent is a serious one, women may be hesitant to believe that they might have been influenced by some-

one. This belief represents a large obstacle for future researchers to overcome. Perhaps adopting a more open-ended, or even hypothetical approach (e.g., “Do you think other women may be influenced by the pregnancies of friends and/or family?” or “How do you think pregnant women may benefit by having pregnant friends and/or family?”) would be useful, as these types of questions are less direct and would allow women to answer without directly implicating themselves.

One final area of future inquiry pertains to differences in individuals who did and did not plan their pregnancy. In our study, approximately one-third of participants indicated that their pregnancy had not been planned. Future researchers could examine whether incidences of synchronous pregnancies differ between those with unplanned pregnancies that resulted due to indifference (e.g., “We weren’t trying to get pregnant, but we weren’t trying to prevent it either”) and between those that were taking active measures (e.g., contraceptives) to prevent pregnancy. One would expect that women actively trying to prevent pregnancy would not be influenced by the pregnancies of other women in their lives. Our data do not directly address this issue, but eight women did respond that at least one reason for choosing to continue their pregnancy was that they wanted to raise their children while their family and/or friends were doing the same.

Though the current study cannot make any conclusive statements about the existence of synchronous pregnancy as an adaptive behavior in humans, the data presented offer future researchers a basis upon which to examine this phenomenon further. We had three findings, in line with our hypotheses. First, we documented the existence of synchronous pregnancy, such that the majority of pregnant women have at least one friend who is simultaneously pregnant, while fewer women have at least one family member who is simultaneously pregnant. The majority also have had family or friends that had given birth in the last 12 months. Second, we were less successful in determining whether women’s decisions to become pregnant were directly, consciously influenced by the pregnancies of friends or family members. In general, when asked directly, women dismissed the influence of a pregnant, or recently pregnant, friend or family member on their own pregnancy. Third, we investigated the sharing of resources or parenting with currently or recently pregnant friends and family members. Most women planned to, or were currently, sharing parenting resources (e.g., babysitting, clothing, toys, advice) with their pregnant family and friends, as well as those that had recently given birth. These resources were both material (e.g., toys, clothing) and intangible (e.g., the sharing of tips and advice). These results suggest one potential benefit of synchronous pregnancy.

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