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Understanding the Demographic Challenge: Education, Orthodoxy and the Fertility of American Jews

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Abstract Fertility is a key contributor to the demographic vitality of American Jewry. Recent studies have found that the fertility rate of American Jews is below that of the general public and below replacement level. The Jewish community is asking whether fertility rates are amenable to policy intervention and, if so, what sorts of interventions have the potential to increase fertility rates. This paper uses data from the Pew Research Center's (A portrait of Jewish Americans: Findings from a Pew Research Center Survey of U.S. Jews, 2013) Survey of U.S. Jews to examine the fertility of American Jewish women currently of childbearing age. Drawing on the Theory of Conjunctural Action and on fertility patterns in the broader U.S. population, it models the fertility of American Jewish women as a function of sociodemographic and religious characteristics, focusing particularly on the roles of education and Orthodoxy. While Orthodox women have birthrates that contribute to strong population growth, fertility rates among the non-Orthodox do not reach replacement level, with the college educated majority likely to average only 1.5 births by age 40. The potential of various policy interventions designed to increase fertility are discussed, including indirect benefits like free or subsidized childcare, lobbying for changes in U.S. public policy and actively nurturing pronatalist norms in communal institutions.

Keywords Education · Religion · Jews · Fertility · Theory of Conjunctural Action

In 1967, American Jewish theologian Emil Fackenheim proposed that Jews have a moral and religious obligation to deny Hitler a posthumous victory by preserving

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Judaism and the Jewish people (Fackenheim 1982). Over the next two decades, scholars and Jewish communal leaders focused on fertility[1] as a means to this end (Himmelfarb and Baras 1978; Zimmerman and Trainer 1979). Following the headline finding from the 1990 National Jewish Population Survey that 52 percent of recent marriages of Jews were to non-Jews (Goldstein 1992; Kosmin et al. 1991),[2] academic and communal discourse about the demographic vitality of American Jewry shifted focus from fertility to intermarriage. Recently, however, interest in fertility has been renewed by the Pew Research Center's (2013) Survey of U.S. Jews, which found that the completed fertility of American Jews ages 40 to 59 was 1.9, below that of all Americans in the same age group (2.2) and below replacement level (2.1).

Low fertility poses a challenge across the globe, both to countries where the proportion of working people is decreasing substantially relative to the proportion of retirees (Longman 2004; Takayama and Werding 2011) and to religious, ethnic and linguistic groups whose survival depends on maintaining a critical mass (see, e.g., Termote 2011; Unisa et al. 2008). Drawing on the Theory of Conjunctural Action (Johnson-Hanks et al. 2011), this paper uses data from the Pew survey to model the fertility of American Jewish women currently of childbearing age (18 to 44) as a function of sociodemographic and religious characteristics, focusing particularly on the dynamics of education and Orthodoxy. Because this cohort has not yet completed the childbearing years, subgroup differences may reflect differences in the quantum or tempo of births. Despite this difficulty, the younger cohort is examined because the social reality fundamentally changed after the "quiet revolution" in women's economic status in the 1970s (Goldin 2006). The findings are used as the basis for a discussion of possible Jewish communal policy responses to the low fertility of American Jews.

Fertility as a Jewish Communal Challenge

Fertility is a key concern for American Jews because of its contribution to reproductivity, which is generally defined by demographers as the extent to which a population is replacing its numbers by natural processes (Dharmalingam 2008). For a group that is defined by both geographic and ideational criteria, reproductivity involves the balance between three sets of factors: (1) births and deaths, (2) immigration and emigration and (3) accessions and secessions (DellaPergola 2002). Thus, while the fertility rate of American Jews is below replacement level, the "effectively Jewish fertility rate," or the number of births of children being raised as Jews (Schmelz 1981, p. 70), may be higher or lower. This depends largely on rates of Jewish identification among children of intermarriage (see, e.g., Cohen 2014; Saxe et al. 2014).

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[1] Contrary to the popular usage, social scientists use the word fertility to mean number of births, while the physiological capacity to bear children is called fecundity (Estee 2008).

[2] Following criticism from Cohen (1994), the 52 percent figure was later revised downward to 43 percent (Kotler-Berkowitz et al. 2004).

Aside from the issue of reproductivity, a trend toward delayed childbearing and low fertility also raises additional concerns relating to (1) the communal engagement of young adults and (2) Jewish norms and values. Single, childless adults are far less likely to be members of Jewish organizations than married adults and those living in households with children (Fishman and Cohen 2017; Sheskin and Kotler-Berkowitz 2007). Many Jewish young adults feel "demographically disenfranchised" in mainstream Jewish institutions dominated by families (Cohen and Kelman 2007, p. 19), and communal initiatives designed to engage single young adults have met with limited success (Chertok et al. 2009). This phenomenon is not unique to the Jewish community—marriage and parenthood are positively associated with religious engagement in the United States in general, and the considerable decline in religious service attendance among the current generation of young adults is almost entirely attributable to an increase in the age at which Americans enter marriage and parenthood (Wuthnow 2007). For the Jewish community, delayed childbearing and low fertility thus likely lead to lower levels of synagogue engagement among young adults.

Delayed childbearing and low fertility also reflect distancing from normative Jewish values regarding childbearing. Notwithstanding the heterogeneity of contemporary Jewish thought and practice, all three major movements of American Judaism—Reform, Conservative and Orthodox—agree that raising children is a Jewish value. The classic texts of Jewish law hold that procreation is a religious duty and that couples should endeavor to have as many children as possible (Feldman 1995). This position is ubiquitous within the Orthodox community. Similarly, the Conservative movement holds that every Jewish couple who can produce children is obligated to have at least two and encouraged to have more than two (Abelson and Dorff 2007; Dorff 1998). The Reform movement does not hold that procreation is required, but Reform rabbis have called procreation a "positive good" and "the choice that Jews *ought* to make for their households and families" (Central Conference of American Rabbis 2010). Across the spectrum of contemporary Jewish religious thought, low fertility and childlessness are viewed with alarm.

Explanations for Low Fertility: Socioeconomic Status, Race and Religiosity

For the past half century, American Jews as a group have had fertility rates substantially lower than those of other Americans (Althaus 1992; Cherlin and Celebuski 1983; DellaPergola 1980, 2013; Goldstein 1981, 1992; H. Hartman and Hartman 2009; M. Hartman and Hartman 1996; Jordan 2006; Mott and Abma 1992; Sabatello 1991; Sherkat 2014; Smith 2005). A study based on data from the General Social Surveys of 2000–2006 estimated the total fertility rate (TFR)[3] for Jews at 1.4, lower than the replacement level and lower than the TFRs of all other major

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[3] TFR is a synthetic measure of the number of children a woman would have over her lifetime were she subject to all the age-specific fertility rates in a given year (Estee 2008).

religious and ethnic groups, including liberal, White Protestants (1.8) and non-Hispanic Catholics (2.1) (Skirbekk et al. 2010). A separate study using the General Social Surveys also indicated that Jewish women had the highest age at first birth of all major religious groups at 25.9 years (Sherkat 2014). Explanations for the relatively low fertility of American Jews have centered around three factors known to influence fertility outcomes in the United States: socioeconomic status, race and religiosity.

In the United States, fertility patterns are strongly related to socioeconomic status and race. Being White and having more education are associated with a higher age at first birth (Ellwood and Jencks 2004; Nitsche et al. 2012; Yang and Morgan 2003), higher rates of childlessness (Abma and Martinez 2006; Craig et al. 2014; Lundquist et al. 2009), lower overall fertility (Yang and Morgan 2003) and lower rates of nonmarital childbearing (Musick 2002, 2007; Wu 2008). The reasons for these differences are complex, but scholars have proposed that growing income inequality and a shrinking gender wage gap provide advantaged women strong incentives to delay family formation and pursue educational and professional advancement (Ellwood and Jencks 2004; McLanahan 2004).

As a group, American Jews are characterized by socioeconomic advantage. First, directly after World War II, Americans began to see Jews as simply White rather than as "Euro-ethnics" (Brodkin 1998, p. 28; Goldstein 2006), and 89 percent of Jews now identify their race as non-Hispanic White (Tighe et al. 2013). Second, since World War II, American Jews have had considerably higher levels of educational attainment, occupational status, earnings and wealth than both the general U.S. population and non-Hispanic Whites (Burstein 2007; Chiswick 2010; Chiswick and Chiswick 2007; Keister 2003; Pyle 2006). For example, in 2013, 58 percent of adult Jews were college graduates, compared to 29 percent of non-Hispanic Whites, and 28 percent of adult Jews had a graduate degree, compared to 10 percent of non-Hispanic Whites (Pew Research Center 2013; U.S. Census Bureau 2016). The negative relationship between educational attainment and fertility is present among American Jews, as well, and both quantitative and qualitative research has pointed to socioeconomic status as a primary determinant of fertility for American Jews (H. Hartman and Hartman 2009; Shain 2015).

Fertility patterns are also strongly related to religiosity in the United States. Religiosity is associated with lower rates of nonmarital births (Adamczyk and Felson 2008; Lyons and Smith 2014) and childlessness (C. K. Jacobson and Heaton 1991), in addition to higher fertility overall (Borch et al. 2011; Hackett 2008, 2009; Hayford and Morgan 2008; Lehrer 1996; Zhang 2008). Explanations for this relationship have focused on distinctive religious norms surrounding fertility (Goldscheider 2006; Hayford and Morgan 2008) and the ways in which religious communities transmit and reinforce these norms (Goldscheider 2006; Hackett 2008, 2009; Heaton 1986; Heaton and Goodman 1985; Lehrer 1996; McQuillan 2004).

As a group, American Jews are less religious than other Americans, at least in the sense of being less pious or devout. Jews are far more likely than other Americans to describe their outlook as essentially secular (Kosmin 2012; Kosmin and Keysar 2006; Pew Forum on Religion and Public Life 2008). More than one fifth (22

percent) of American adults who identify as Jewish also say that their religion is atheist, agnostic or nothing in particular (Pew Research Center 2013). Furthermore, only 23 percent of American Jews attend religious services at least monthly, compared to half of the U.S. general public (Pew Research Center 2013). However, notwithstanding the varied and multi-dimensional nature of contemporary Orthodoxy (Keren-Kratz 2016), the 10 percent of American Jewish adults who identify as Orthodox are very religious, with religious service attendance on par with White evangelical Protestants and Black Protestants (Pew Research Center 2013). Thus, only a minority of American Jews have regular exposure to religious communities and religious norms surrounding fertility.

Among American Jews, higher levels of religiosity, particularly identifying as Orthodox, are associated with higher desired fertility (Cohen and Ritterband 1981; Ritterband and Cohen 1983; Verbit 1983) and higher achieved fertility (Cheskis 1983; Goldscheider 1993; Goldstein 1992; H. Hartman and Hartman 2009; Lazerwitz et al. 1997; Mott and Abma 1992; Ritterband 1992). Qualitative research has also connected commitment to Jewish values and continuity with higher fertility and fertility intentions (Avgar 1987; Fishman 1993; Shain 2015). Thus, the average completed fertility of U.S. Jewish adults ages 40–59 is 4.1 for the Orthodox, 1.8 for the Conservative, 1.7 for the Reform and 1.4 for those with no denomination (Pew Research Center 2013).[4] Some scholars have suggested that the typical, negative relationship between fertility and socioeconomic status may be absent among American Jews with strong religious identities, such as the Orthodox (Cheskis 1983; Ritterband 1992), but that suggestion has not yet been tested empirically.[5]

The "Individual-First" Versus "Family-First" Schemas

The two sets of factors that are negatively associated with fertility within the United States—namely, socioeconomic status and religiosity—are also negatively associated with fertility around the world. Scholars of the "Second Demographic Transition" have connected sustained subreplacement fertility on the country level to both (1) success in globalizing labor markets, which involves prolonged formal education, and (2) an ideational move toward secularism and individualism (Lesthaeghe 2010, 2014). These scholars have also documented substantial within-country variation in fertility rates (e.g., Lesthaeghe and Neidert 2006), but the theory of the Second Demographic Transition fails to adequately explain this within-country variation.

The Theory of Conjunctural Action (TCA) does address within-country variation, positing that social location *within* a given country—including socioeconomic status, race, religion and so forth—exposes individuals to different *structures*

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[4] Orthodox Jews comprise 10 percent of the U.S. Jewish population; Conservative Jews, 18 percent; Reform Jews, 35 percent; those with no denomination, 30 percent; and other denominations (e.g., Reconstructionist), 6 percent (Pew Research Center 2013).

[5] Such is the case for American Mormons, among whom the relationship between educational attainment and fertility is actually positive (Heaton 1986; Heaton et al. 2004; Merrill et al. 2003; Stanford and Smith 2013).

consisting of the interplay between *schema* and *materials* (Johnson-Hanks et al. 2011).[6] Schema are the mental patterns through which people understand reality, such as paradigms, metaphors and typologies; materials are the concrete manifestation of schema in place and time, such as legislation, institutions and rituals. The structures operating on an individual through her life history of social locations affect her learned schemas—that is, her accumulated ideas and values—and her identity, or understanding of herself in relation to the world. When making a choice, such as whether to begin a romantic relationship or use contraception, an individual is likely to act according to the schema that are most fully integrated into her identity. Thus, within-country variation is explained through the different schemas that are learned by individuals in different social locations, while individual-level variation is explained by the schemas an individual deploys in making her own choices.

The schema to which American Jews are exposed as a result of their social locations can help to explain their fertility patterns. Johnson-Hanks et al. (2011, p. 77) posit the existence of two broad, competing schemas for family formation in the United States: "individual-first" and "family-first." Both of these schemas share the idea that marriage and children are a normative part of the life course, but they differ in timing and emphasis. The individual-first schema asserts that independence and self-actualization should *precede* marriage and childbearing in order to allow for a fulfilling family life. This schema is a key element of the structures experienced by upper middle class women, who learn that childrearing requires both extensive resources and family stability. Being ready for childrearing therefore means acquiring an advanced education and establishing a successful career, followed by marriage (Johnson-Hanks et al. 2011). The family-first schema asserts that marriage and childbearing should *take precedence over* other goals and that meaning and fulfillment derive from family life. Religious ritual and institutions tend to reinforce the family-first schema (Johnson-Hanks et al. 2011).

As would be expected given their socioeconomic and racial profile, most American Jews seem to operate according to the individual-first schema. In interview studies, most American Jews describe life plans that involve education, career, marriage and childbearing—in that order (Fishman 1993; Parmer 2015; Shain 2015). Wertheimer (2005, p. 44) observed that only Orthodox Jewish communities nurture pronatalist norms and "countercultural ideas" about sexuality and family life. Unfortunately, rich descriptions of the materials that shape and reinforce these disparate family formation schemas are not available. Heaton and Goodman (1985, p. 356) provided a few examples of how the family-first schema may manifest itself in religious communities:

> To illustrate, endogamous marriage is facilitated by dance and other social functions that support the marriage market, child rearing is facilitated by neighborhood sharing of child care, and divorce is discouraged by advice on how to make marriages succeed.

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[6] The concepts of schema and materials are similar to Bourdieu's (1977, p. 91) concepts of "mental structures" and "a world of objects.".

Yet, illustrative examples notwithstanding, scholars have not undertaken the detailed, qualitative analysis necessary to understand the interplay between materials and family formation schemas, nor have direct, quantitative measures of these schemas been introduced into surveys of American Jews.

This study will examine the role of the family formation schemas obliquely, by using college education as a proxy for exposure to the individual-first schema and Orthodox identification as a proxy for exposure to the family-first schema. It will also examine whether being socially located in a religious community and having a strong religious identity are related to fertility after controlling for Orthodoxy. In other words, is the family-first schema limited to the Orthodox segment of the population? The next section describes the study's method in detail.

Method

Data

The data source for this analysis is the Pew Research Center's Survey of U.S. Jews., a telephone survey of a large, nationally representative sample of U.S. Jews conducted in Spring 2013 (see Pew Research Center 2013). This analysis will follow the demographic convention of including only female respondents (Estee 2008). Because patterns of education, work and family formation were different among Baby Boomers and older cohorts, this analysis will be further limited to female respondents currently of childbearing age (18 to 44).

The full data set includes individuals who identify as Jewish by religion, individuals who consider themselves Jewish or partially Jewish aside from religion and individuals who had a Jewish parent or were raised Jewish or partially Jewish, regardless of current identity. This analysis will follow the paradigm of the Pew Research Center's (2013) report of findings from the survey, including in the analysis respondents who said that their religion is Jewish (n = 2,786) and respondents who had a Jewish parent or were raised Jewish and who still considered themselves Jewish, but described their religion as atheist, agnostic or nothing in particular (n = 689). Because self-categorization, or identifying oneself as a member of a group, is a precondition for all other dimensions of collective identity (Ashmore et al. 2004), the analysis will not include respondents who do not consider themselves Jewish, even if they have a Jewish parent or were raised Jewish (cf. DellaPergola 2002, 2011).

Variables

The variables to be used in the analysis include a measure of fertility that will be the dependent variable, as well as measures of sociodemographic characteristics, Orthodoxy, religious social location and religious identity.

Fertility

The dependent variable in the analysis will be total number of live births. This was the last question on the survey, phrased "And one last question—how many children have you ever had? Please count all your biological children who were born alive at any time in your life." Responses were recorded as integer values. The survey did not gather information about age at the first or subsequent births.

Sociodemographics

Age at time of interview will be a key control variable in the analysis. A binary variable for having a college degree will be used as a proxy for socioeconomic status and, more broadly, for exposure to the individual-first schema.[7] Finally, because religiosity and geography are correlated in the United States in general (Pew Forum on Religion and Public Life 2008) and among U.S. Jews specifically (Goldstein and Goldstein 1996; Rebhun 2011), census region will be a control variable in the analysis.

Orthodoxy and Interaction Term

Because previous research has indicated that identifying as Orthodox is a strong predictor of fertility outcomes among Jews, a binary term for Orthodox identification will be included in the analysis. In order to test whether the negative relationship between fertility and socioeconomic status is absent among the Orthodox, an interaction between educational attainment and Orthodoxy will also be included.[8,9,10]

Religious Social Location

TCA suggests that the schema to which women are exposed through their social locations help explain their fertility patterns, and that religious communities expose participants to the family-first schema. The 2013 Survey of U.S. Jews included four items related to being socially located in a religious community, shown in Table 1. The Mokken scale procedure was used to confirm that these items form a single scale with a strong Loevinger's H scalability coefficient of 0.56 (Hardouin et al. 2011). Variables were summed to create a religious social location index with values ranging from 0 to 6.

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[7] Preliminary analyses also included a binary variable for identifying as other than non-Hispanic white (8%, N = 31), which yielded an insignificant effect.

[8] Preliminary analyses also included dummy variables for Reform and Conservative identification, which yielded insignificant effects.

[9] Very few (N = 12) non-Orthodox respondents in the subpopulation (Jewish women, ages 18 to 44) were raised Orthodox.

[10] Most Orthodox women in the subpopulation identify as "Hasidic" or "Yeshivish" (80%), while only a few identify as "Modern Orthodox" (14%). Both groups include women with and without college degrees.

Table 1 Questions on religious social location, 2013 Survey of U.S. Jews

Question wording	Response categories
Aside from special occasions like weddings, funerals and bar mitzvahs, how often do you attend Jewish religious services at a synagogue, temple, minyan or Havurah?	(0) Seldom or Never (1) A few times a year, such as for high holidays (2) Once a month or more
Is anyone in your household currently a member of a synagogue or temple, or not? [If Yes:] And is that you or someone else in your household?	(0) No or someone else (1) Yes
How many of your close friends are Jewish? Would you say all of them, most of them, some of them, or hardly any of them?	(0) Some or hardly any of them (1) All or most of them
Please tell me how important each of the following is to what being Jewish means to you … Being part of a Jewish community.	(0) Not an important part (1) Important but NOT essential (2) Essential

Note: Values and value labels reflect recoding by author

Religious Identity

TCA also suggests that individuals act according to the schemas that are most fully integrated into their identities. Because the 2013 Survey of U.S. Jews did not include questions about ideas and values regarding family formation, this analysis will use respondents' religious identities as a proxy for the integration of the family-first schema into their identities. The 2013 Survey of U.S. Jews did include five questions related to religious identity, shown in Table 2. Here, too, the Mokken scale procedure was used to confirm that these items form a single scale with a strong Loevinger's H scalability coefficient of 0.73 (Hardouin et al. 2011). Variables were summed to create a religious identity index with values ranging from 0 to 7. This scale seems to tap the same latent "belief" variable identified by Hartman and Hartman's (2009, p. 130) exploratory factor analysis, which was a significant predictor of age at first marriage for women.

Table 3 presents descriptive statistics for the variables included in the analysis. For further reference, Table 4 presents a bivariate analysis of number of births by age group.

Estimation Procedure

Two hurdle regression models will be presented. Although number of births generally approximates a Poisson distribution (Pullum 2008), because of the influence of both sterility and social norms on individual fertility, the homogeneity assumption of this distribution is often violated (Winkelmann 2008). The hurdle regression models employed here address this issue by using binary logit models to predict the probability of a nonzero outcome and generalized linear models (GLM) to predict nonzero counts (Belotti et al. 2015). The first model will include

Table 2 Questions on religious identity, 2013 Survey of U.S. Jews

Question wording	Response categories
What is your present religion, if any? Are you…	(0) Atheist, agnostic or nothing in particular
	(1) Jewish
How important is religion in your life?	(0) Not too important or not at all important
	(1) Somewhat important
	(2) Very important
To you personally, is being Jewish mainly a matter of…?	(0) Ancestry or culture
	(1) Religion
Please tell me how important each of the following is to what being Jewish means to you … Observing Jewish law.	(0) Not an important part
	(1) Important but NOT essential
	(2) Essential
Do you believe in God or a universal spirit, or not?	(0) No, fairly certain, not too certain or not at all certain
[If Yes:] How certain are you about this belief? Are you absolutely certain, fairly certain, not too certain, or not at all certain?	(1) Yes, absolutely certain

Note: Values and value labels reflect recoding by author

sociodemographic variables, the indices of religious social location and identity, and Orthodoxy. This model will document the basic relationships between fertility and (1) college education (i.e., the individual-first schema) versus (2) religious social location, religious identity and Orthodoxy (i.e., the family-first schema) among American Jewish women. In addition, if religious social location and identity are related to fertility in this model, then they are related to fertility both within and outside of the Orthodox community (cf. Wertheimer 2005). The second model will remove the insignificant indices and add the interaction term between education and Orthodoxy. A significant interaction would indicate that the relationship between education and fertility is different for Orthodox and non-Orthodox women, thus hinting that one of the two competing schemas for family formation becomes dominant when women are exposed to both.[11]

Results

The hurdle regression models are presented in Table 5. Model 1 conforms to expectations vis-à-vis education and Orthodoxy. College education is significantly, negatively related to having a birth and, for women with at least one birth, to total number of births. Orthodoxy works in the opposite direction: it is significantly, positively related to having a birth and to total number of births. On the other hand, neither the religious social location index nor the religious identity index are

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[11] Twenty-nine percent of Orthodox women in the sample have a college degree, compared to 60 percent of non-Orthodox women.

Table 3 Descriptive statistics: U.S. Jewish women, ages 18 to 44

		%	N	Mean (SD)
Parity	0	60	203	
	1	15	75	
	2	13	105	
	3	5	48	
	4	3	29	
	5+	3	40	
	Total	100	500	
Age			503	30.1 (11.8)
Census region	East	43	331	
	Midwest	12	34	
	South	25	72	
	West	21	66	
	Total	100	503	
Race and Hispanic origin	White non-Hispanic	92	471	
	Other	8	31	
	Total	100	502	
Highest school	Less than college	44	189	
	College degree	56	314	
	Total	100	503	
Religious social location index			497	2.4 (2.9)
Religious identity index			497	2.8 (3.4)
Orthodox	Not Orthodox	88	340	
	Orthodox	12	159	
	Total	100	499	

Table 4 Number of births by age

Number of births	Ages 18–24	25–29	30–34	35–39	40–44	All
0	88% (90)	83% (46)	55% (31)	16% (18)	24% (18)	6% (203)
1	6% (12)	7% (9)	17% (15)	39% (20)	17% (19)	15% (75)
2	3% (14)	5% (15)	15% (17)	25% (25)	32% (34)	13% (105)
3	3% (3)	3% (11)	8% (13)	8% (8)	8% (13)	5% (48)
4	0% (0)	1% (4)	2% (11)	5% (6)	1% (8)	3% (29)
5+	0% (0)	2% (5)	3% (12)	7% (15)	9% (8)	3% (40)
Total	100% (119)	100% (90)	100% (99)	100% (92)	100% (100)	100% (500)

significantly related to number of births, controlling for Orthodoxy.[12] This finding may indicate that non-Orthodox religious communities do not inculcate pronatalist family formation schema.

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[12] When Orthodox women are omitted from the model (not shown), again, neither the religious social location index nor the religious identity index are significantly related to number of births.

Table 5 Hurdle models of number of births

	Model 1		Model 2	
	Logit Coef. (Std. Err.)	GLM Coef. (Std. Err.)	Logit Coef. (Std. Err.)	GLM Coef. (Std. Err.)
Age	0.30 (0.04)***	0.09 (0.01)***	0.30 (0.04)***	0.09 (0.01)***
Census region				
Midwest	− 0.39 (0.84)	0.70 (0.27)**	− 0.43 (0.84)	0.85 (0.29)**
South	− 0.43 (0.47)	− 0.14 (0.14)	− 0.40 (0.46)	− 0.11 (0.15)
West	− 1.40 (0.58)*	− 0.03 (0.2)	− 1.35 (0.6)*	0.11 (0.20)
College degree	− 1.77 (0.45)***	− 0.66 (0.14)***	− 1.85 (0.47)***	− 0.69 (0.17)***
Religious social location index	− 0.09 (0.16)	0.06 (0.04)		
Religious identity index	0.14 (0.16)	0.04 (0.04)		
Orthodox	1.65 (0.67)*	1.42 (0.18)***	1.97 (0.49)***	1.82 (0.16)***
College degree * Orthodox			− 0.05 (0.98)	− 0.02 (0.23)

***$p < .001$; **$p < .01$; *$p < .05$

Reference categories: Northeast, No college degree, Not Orthodox

Model 2 removes the insignificant indices and adds an interaction term between college education and Orthodoxy. For the non-Orthodox, having a college degree decreases the odds of having any births by a factor of 0.16 [= exp(− 1.85)], holding all other variables constant. Furthermore, among the non-Orthodox with at least one birth, having a college degree decreases the expected number of births by a factor of 0.50 [= exp(− 0.69)], holding all other variables constant.

Being Orthodox increases the odds of having any births by a factor of 7.18 [= exp(1.97)] and, among women who have given birth, increases the expected number of births by a factor of 6.14 [= exp(1.82)], holding all other variables constant. The effect of college education is not significantly different among the Orthodox, as indicated by the insignificant interaction terms. Thus, college education is associated with lower fertility among the Orthodox and the non-Orthodox.

Compared to living in the Northeast, living in the West decreases the odds of having any births by a factor of 0.26 [= exp(− 1.35)] and living in the Midwest increases the expected number of births by a factor of 2.34 [= exp(0.85)], holding all other variables constant. These findings may be related to the internal migration flow of U.S. Jews, who are moving from the Northeast and Midwest to the South and West. Unmarried and childless adults have more autonomy in deciding to migrate (Rebhun 2011) and, thus, may be overrepresented in the West and underrepresented in the Midwest.

Figure 1 presents the mean expected number of births to Orthodox and non-Orthodox Jewish women with and without a college degree, by age. Orthodox women, who represent 12 percent of American Jewish women of childbearing age, have birthrates that contribute to strong population growth. Orthodox women
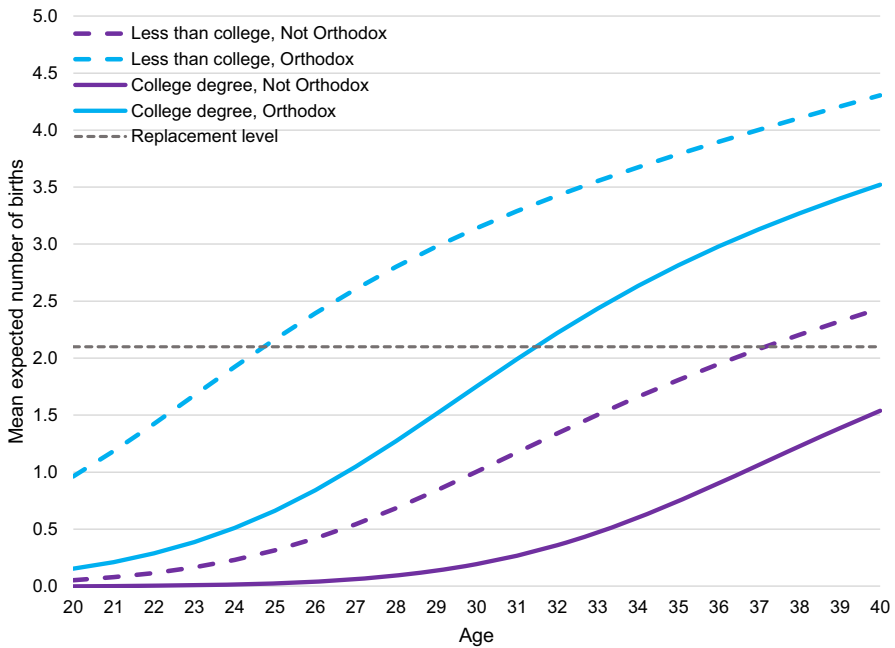
Fig. 1 Mean expected number of births by age, education and Orthodoxy. Predictive margins from Model 2 (Table 5). Region held at Northeast

without a college degree—the vast majority of whom identify as "Hasidic" or "Yeshivish"—reach replacement level at age 25 and a mean of 4.3 births at age 40. Orthodox women with a college degree—including the preponderance of Modern Orthodox women—reach replacement level later, at age 32, but still reach a mean of 3.5 births at age 40. In contrast, non-Orthodox women, who represent 88 percent of American Jewish women of childbearing age, have birthrates that contribute to negative population growth. Those without a college degree reach replacement level at age 37; those with a college degree never reach replacement level, averaging one birth at age 37 and 1.5 births at age 40. Of course, the completed fertility of the younger women in this cohort may ultimately deviate from the trend suggested by the fertility of the older women in this cohort—in either direction.

Discussion and Policy Implications

Rawidowicz (1998) famously described Jews as the "ever-dying people," with each generation fearing that it will be the last and, paradoxically, surviving because of its concern about continuity. The present study indicates that low fertility among American Jews is exerting negative pressure on the reproductivity of the U.S. Jewish population: among non-Orthodox Jewish women of childbearing age, fertility rates do not reach replacement level, with the college-educated majority likely to average only 1.5 births by age 40. At the same time, intermarriages have

the potential to exert positive counter-pressure on Jewish reproductivity if the rate at which children of intermarriage identify as Jewish exceeds 50 percent. Research has shown that Jewish identification is amenable to policy intervention (Sasson et al. 2015). Is the fertility of non-Orthodox American Jews similarly amenable and, if so, what sorts of interventions have the potential to increase fertility rates?

Many European and OECD countries faced with below-replacement fertility have instituted policy interventions designed to increase fertility. Most of these policies have been based on microeconomic theories, attempting to increase demand for children by reducing opportunity cost, either through direct benefits like cash payments and tax credits or though indirect benefits like free or subsidized childcare and family leave (Gauthier 2007; Werding 2011). Using similar reasoning, many Jewish community leaders have suggested that the Jewish community offer free or subsidized early childhood education and care services (DellaPergola 2011; Fishman 2014; Kamerman 1982; Singer 1996; Vogelstein and Jacobs 2003) and lower the cost of Jewish living in general (Fishman 2014; Singer 1996). Others have suggested that the Jewish community lobby for changes in U.S. public policy that would benefit parents of young children, such as paid parental leave and public early childhood education and care services (C. Jacobson 1992; Pogrebin 1991). Regardless of the feasibility of these suggestions, evidence suggests that economic incentives at the communal or national level are unlikely to increase fertility. Scholars who examined pronatalist policy interventions in European and OECD countries found only mixed evidence of any impact, and the impact that was detected was small in magnitude and possibly only on the timing, rather than the number, of births (Gauthier 2007; Sleebos 2003; Thévenon and Gauthier 2011). Ultimately, childbearing does not seem to be the result of an economically rational decision-making process (see Robinson 1997).

TCA suggests that childbering is the result of social location, learned schemas and identity. Unfortunately, systematic data on American Jews' attitudes toward family formation are not available, and the Pew Research Center's Survey of U.S. Jews used in this analysis did not even include a question on desired fertility. Nevertheless, due to their socioeconomic position and secular bent, it seems likely that most American Jews have learned the "individual-first" schema that encourages educational and professional advancement at the expense of marriage and fertility, rather than the "family-first" schema that encourages early marriage and childbearing (Johnson-Hanks et al. 2011, p. 77). The high fertility of Orthodox women with college degrees suggests that college education does not necessarily preclude individuals from drawing primarily on the family-first schema in making decisions relevant to fertility outcomes. Yet, the lack of significance of the religious social location and identity indices once controlling for Orthodoxy suggests that non-Orthodox Jewish religious communities do not instill the family-first schema in their participants. Wertheimer (2005) argued that non-Orthodox rabbis, communal leaders and organizations could increase American Jews' fertility by actively nurturing pronatalist norms. Similarly, Fishman (2002) suggested that the Jewish community launch a public information campaign encouraging women who want children to have them at earlier ages.

Would a shift in the Jewish communal discourse surrounding childbearing really have an effect on the fertility of American Jewish women? Gauthier (2007, p. 326) posited that certain pronatalist policies in European and OECD countries faced with low fertility may have had a positive influence on fertility by "valorizing" children, or shifting the preferences and values of the population toward a more pronatalist stance. It is not clear that the organized Jewish community carries enough weight among most American Jews to effect this kind of change, and fostering pronatalism among non-Orthodox Jews may prove more difficult than fostering Jewish identity among children of intermarriage.

Conclusion

This analysis identified two major factors affecting the fertility of contemporary American Jews: education and Orthodoxy. The fertility patterns of the non-Orthodox majority reflect the individual-first schema prevalent among America's upper middle class, which leads to delayed childbearing and low lifetime fertility. For this group, religious participation and identity do not alter fertility patterns, indicating that non-Orthodox religious communities do not manifest pronatalist norms. The experience of the Orthodox minority, with high fertility regardless of educational attainment, suggests that it is possible to maintain pronatalist norms without sacrificing educational attainment. Unfortunately, research on how the Orthodox community maintains these norms is lacking—and some have suggested that maintaining pronatalist norms in contemporary societies requires the sacrifice of gender egalitarianism (Immerman and Mackey 2003), which is highly valued by many American Jews. Furthermore, there are few precedents for successful policy interventions around fertility. Additional research into how high fertility subgroups transmit countercultural norms around family formation might inform a policy response to low fertility that would ensure the demographic vitality of American Jewry.

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