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2014 Working Paper Series

UNPACKING THE "BLACK BOX" OF RACE-ETHNIC VARIATION
IN FERTILITY

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Abstract

Race-ethnic differences in a range of fertility behaviors are long-standing and well-documented, and these differences are attenuated, but not eliminated, when accounting for socioeconomic disparities. The residual differences are often attributed to vague and untested variation across race-ethnic groups in knowledge, attitudes, psychological attributes, normative beliefs, and social context. We use the longitudinal Toledo Adolescent Relationship Study (TARS), which contains a rich set of such factors measured in early adolescence, to assess whether they contribute to race-ethnic differences in having a birth among men and women ages 17-24 (n=1,068). Specifically, we test whether individual attitudes, religiosity, and academic behaviors; knowledge and behaviors regarding sex and dating; peer normative context; and parental communication about sex account for variation in the risk of an early birth. We find that socioeconomic factors attenuate but do not reduce differences between Black, Hispanic, and White respondents. Including adolescent academic performance and early entry into sex reduces the Black-White difference in the odds of early fertility to nonsignificance; however, beyond socioeconomic status, none of the broad range of factors further attenuate Hispanic-White differences, which remain large and statistically significant.

Race-ethnic differences in fertility behaviors have been a longstanding feature of American childbearing patterns. Although there is some variation in completed fertility, with Hispanic women having slightly more children on average than White, Black, and Asian women (U.S. Census Bureau 2013), the real variability occurs in the circumstances surrounding childbearing, particularly the entrance into parenthood (Sweeney and Raley 2014). Black and Hispanic women begin childbearing at much earlier ages (23.4 and 23.7 years old on average, respectively) than White women (26.5) (Martin, Hamilton, Ventura, Osterman, and Mathews 2013). Further, most young White women (77% of those ages 20-24) are childless, but significantly fewer Black and Hispanic young women are childless (56% and 58%, respectively) (U.S. Census Bureau 2013).

These race-ethnic differences in fertility behaviors are concerning for at least three reasons. First, early childbearing, which is predominantly nonmarital, is associated with a range of negative outcomes for children, parents, and families in both the short- and long-term, even after accounting for selection (Haveman, Wolfe, and Pence 2001; McLanahan 2011; Williams, Sassler, Frech, Addo, and Cooksey, 2011). Second, because economically disadvantaged individuals are more likely to have children earlier and in less stable unions, race-ethnic differences thus reflect ongoing social and economic disadvantage among minorities in the United States. Third, to the extent that race-ethnic minorities are economically disadvantaged *and* experience negative consequences of early childbearing, social and economic disadvantage may be compounded and exacerbated by early fertility, contributing to further divergence in both family behaviors and well-being (McLanahan 2004).

As such, researchers have long sought to examine and ultimately explain race-ethnic differences in fertility behaviors (Forste and Tienda 1996). Much of this literature has approached the issue from the 'social characteristics hypothesis,' which posits that the

underlying cause of race-ethnic differences in fertility is actually differences in demographic risk profiles (i.e., age, education, income) (Burr and Bean 1996; Westoff and Marshall 2010; Yang and Morgan 2003). For instance, lower levels of parental education, living in a single or step-parent family, and having a family history of teenage childbearing increase the risk of a teen birth (Hoffman and Maynard 2008; Meade, Kershaw, and Ickovics 2008), as does neighborhood poverty (South and Crowder 2010). Higher levels of disadvantage among race-ethnic minorities in the United States, then, increase the risk of early childbearing. Although there is support for the social characteristics hypothesis, such approaches have largely been unable to eliminate, or even substantially attenuate, race-ethnic differences in fertility (Landale and Oropesa, 2007; Lichter, Johnson, Turner, and Churilla 2012). The residual differences between race-ethnic minority and White individuals are attributed to rather vague attitudinal, normative, or behavioral factors, but explicit empirical examinations of such factors are rare (Lichter et al. 2012), and the underlying factors contributing to variation thus remain in a "black box" (Oropesa and Landale, 2004). In the teen fertility literature, although specifics vary, alternative explanations considering such factors often focus on differences in what can broadly be considered cultural and psychosocial influences: protective factors such as psychological resources, religiosity, and academic performance; individual knowledge, attitudes, and behaviors surrounding sex and childbearing; and the normative climate among peers and family regarding sexual activity and reproduction (Kirby, Lepore, and Ryan 2005).

Yet, the research to date examining the linkages between these types of individual and social behaviors and beliefs and fertility, particularly the work on race-ethnic differences, has several limitations. Not only has it almost entirely focused on teens (e.g., Manlove, Steward-Streng, Peterson, Scott, and Wildsmith 2013; Raneri and Wiemann 2007), much of it analyzes sexual behaviors rather than fertility itself (e.g., Rink, Tricker, and Harver 2007; Sieving,

Eisenberg, Pettingell, and Skay 2007). This is partially due to data limitations; surveys with a

breadth of social and psychological measures are not designed to study fertility, whereas

demographic surveys rarely contain rich sets of psychosocial measures. Further, the research

specifically aimed at understanding fertility among minority groups is often limited by small and

nonrepresentative samples (e.g., Rosengard, Phipps, Adler, and Ellen 2004, 2005) or analyzes

only minorities, making it difficult to determine whether attitudes and normative influences

differ by race-ethnicity (e.g., Aarons and Jenkins 2002; Yee and Simon 2010). Moreover, much

of this work is cross-sectional and, as such, it cannot determine causality; it is quite possible, for

instance, that individuals with an off-time birth go on to experience psychological distress or

seek out peers with permissive attitudes toward sex and childbearing. Thus, there is a clear need

to establish whether individual psychological resources, beliefs, and behaviors, along with the

beliefs of peers and family members, are actually associated with fertility, whether they vary

across race-ethnicity, and whether any variation in these factors explains race-ethnic differences

in fertility behaviors. That is, there is much work to be done to try to unpack the proverbial

"black box" of race-ethnic differences in childbearing behavior.

In this paper, we try to fill this gap. We test whether a broad set of indicators, measured

in early adolescence – religiosity, academic, and psychological factors; sexual knowledge and

attitudes; dating and sex behaviors; perceptions of peer sexual behavior and attitudes; and

parental discussions about sex and dating – in addition to a number of socioeconomic variables,

explain race-ethnic variation in the risk of a birth during young adulthood, using a unique sample

of men and women ages 17-24 from the Toledo Adolescent Relationship Study (TARS). In

doing so, we expand beyond the typical focus on teenagers to include individuals in their early

twenties. Young adulthood is a key transition period with long-term implications for future

statuses and transitions, and the entrance into parenthood is a pivotal life course transition (Knoester and Eggebeen 2006).

Fertility during the transition to adulthood

Emerging adulthood is a "demographically dense" period of development from the late teens up to the mid-twenties, typically defined as ages 18 – 25 (Arnett 2000; Rindfuss 1991). During adolescence, an important aspect of emotional maturation is the shift from peer and familial relationships to intimate relationships (Giordano 2003), and this shift intensifies during the transition to adulthood. Intimate relationships during emerging adulthood are longer, more committed, and usually involve sexual intercourse (Giordano, Manning, and Longmore, 2006; Michael, Gagnon, Laumann, and Kolata 1995). Higher rates of sexual activity, in turn, increase the risk of pregnancy and childbearing. Because fertility is a non-reversible event (Morgan and Rindfuss 1999), understanding the circumstances in which young adults enter early parenthood is important because it sets the stage for many future events.

Teens and young adults, regardless of race-ethnicity, tend to believe it is better to wait to have children until they are financially secure and in stable relationships (Edin and Kefalas 2005; Thornton and Young-DeMarco 2001). Moreover, there is some evidence that non-White compared with White individuals are more disapproving of nonmarital fertility (e.g., Martinez, Chandra, Abma, Jones, and Mosher 2006). Yet many young adults do have children, particularly among race-ethnic minorities (Chandra et al. 2005; Finer and Zolna 2011; Guzman, Wildsmith, Manlove, and Franzetta 2010). The mechanisms contributing to race-ethnic differences in the timing of parenthood remain elusive, but an exhaustive review of the teen sex and fertility literature by Kirby (2007) identified several key factors related to the risk of teen childbearing overall: individual psychosocial protective resources (i.e., academic performance, religiosity, self-esteem), individual orientation and behaviors regarding sex and childbearing, peer and

parental behaviors and norms, and socioeconomic status. As implied by the scope of the review, most of the research addressing early fertility has focused on teens, ignoring the early twenties when childbearing is much more prevalent. Consequently, it remains to be seen to what extent, if any, these factors vary by race-ethnicity and contribute to differences in fertility among young adults.

Psychological, social, and cultural explanations of fertility behaviors

Based on Ajzen and Fishbein's (1980) theories of reasoned action and planned behavior, research shows that individuals with positive attitudes toward children tend to have children, while those who have positive attitudes toward competing activities tend to delay, have fewer, or have no children (see Barber and Axinn 2005 for a summary of this literature). Similarly, teens with more knowledge about sex and reproduction and those who have "contraceptive self-efficacy" (i.e., feel willing and able to use contraception when sexually active) are less likely to engage in unprotected sex (Longmore, Manning, and Giordano 2004; Ryan, Franzetta, and Manlove 2007). This research, though, largely draws on very specific individual-level attitudes toward sex, contraception, childbearing and competing activities. Alwin (2005) makes a case for a broader definition of social-psychological mechanisms, moving beyond specific sex- and fertility-related attitudes to include beliefs, preferences and evaluations, social norms, and personality characteristics. This broader framework is similar to the ecological model (Bronfenbrenner 1979) often seen in studies of teenage childbearing (e.g., Manlove et al. 2013; Raneri et al. 2007), essentially arguing that multiple dimensions influence fertility and family formation decisions.

We adopt this more general definition, doing so in part because any analyses of young adult behavior – particularly behaviors involving forming partnerships and having children – must acknowledge the social, emotional, and psychological changes that accompany the

transition to adulthood. Although it is important to consider direct measures of attitudes toward sex and childbearing (such as sexual permissiveness or the belief that having a child at a young age would be detrimental), prior research has found that factors such as self-esteem, self-efficacy, and religiosity are associated with sexual behaviors and early fertility (Baumeister, Campbell, and Krueger 2003; Koniak-Griffin, Lesser, Uman, and Nayamathi 2003; Mazzaferro, Murray, Ness, Bass, Tyus, and Cook 2006), and these change over the life course. During adolescence and emerging adulthood, individuals experience an increase in their self-esteem (Galambos, Barker, and Harvey 2006), which may be, counterintuitively, associated with risky behavior (Baumeister et al. 2003). Religiosity is high during early adolescence and generally falls during the transition to adulthood, and it tends to discourage both sexual behavior and contraceptive use among the sexually active (Zaleski and Schiaffino 2000); yet religiosity is also associated with early fertility (Hayford and Morgan 2008). A life course perspective also considers whether behaviors that are normative in a broad sense are risky when they occur at different points in the transition from adolescence to adulthood; although it is normative for teenagers to date and to explore their sexuality, adolescents who are especially precocious (for instance, those who begin dating and engaging in sexual activity at younger ages) are likely at high risk of an early birth.

Further, although emerging adults are developmentally able to make decisions, their goals and beliefs are often influenced by peer and parental socialization. During adolescence, peers become an increasingly important source of information and social norms. Adolescents who have a greater proportion of sexually active friends are more likely to be sexually active themselves (Sieving et al. 2007). At the same time, parents retain influence and are an important source of information (Wang, Simons-Morton, Farhart, and Luk 2009), and individual expectations regarding competing obligations, such as educational attainment and marriage are

due, in part, to familial norms and expectations (Barber 2000, 2001). The evidence about parental communication about sex and dating is mixed. Some work finds that adolescents who report learning about sex from their parents tend to have beliefs that encourage the delay of sexual debut (Bleakley, Hennessy, Fishbein, Coles Jr., and Jordan 2009), and those who report open channels of communication with parents tend to delay sexual activity and use condoms more often (Hutchinson 2002). However, other work suggests that greater parental communication may occur because of early sex or dating experiences (Davis and Friel 2001). Further, the effectiveness of mother-child discussions about sex may be limited, especially when mothers dominate the conversation (Lefkowitz et al. 2000); this fits in with literature suggesting that high levels of parental involvement in their adolescents' and young adults' lives can sometimes have a negative association with well-being, depending on the character of the interactions (Giordano, Johnson, Manning, and Longmore forthcoming). Still, these early parental and peer influences form the basis of identities as individuals transition to adulthood.

Race-ethnicity, fertility, and variation in individual attitudes, behaviors, and socialization

The extent to which race-ethnic differences in fertility is explained by differences in protective and normative factors remains to be seen. In many fertility studies, the differences between race-ethnic minorities and Whites that remain after controlling for socioeconomic characteristics are attributed to rather vague cultural, attitudinal, or normative factors, but explicit empirical tests of such factors are rare (Lichter et al. 2012). For instance, the emphasis on family values and traditional gender roles among Hispanic individuals is suggested as an explanation for higher fertility (Landale and Oropesa 2007). Geronimus (2003) argued that early fertility among Black women might be encouraged, reflecting a normative multigenerational family structure that would allow young parents to maximize potential support in the face of large-scale socioeconomic disadvantage and discrimination. Actual tests of cultural explanations

for group differences in fertility behavior are rare, although there is a body of research documenting that Black and Hispanic, compared with White individuals, may have different values, intentions, and expectations of family behaviors (Crissey 2005; East 1998; Sassler and Schoen 1999). The limited research explicitly examining attitudes, psychological factors, and normative influences across race-ethnicity is due in part to the difficulty of measuring appropriate indicators prior to family formation (given concerns over the endogeneity between attitudes and behaviors). As such, cultural explanations are often essentially residual explanations, as noted by Lichter et al. (2012), where the inability to eliminate or attenuate race-ethnic differences by controlling for structural and economic factors leaves a black box that is attributed to unobserved or unmeasured cultural differences in individual psychological attributes and behaviors, along with social norms and attitudes, across race-ethnic groups.

As mentioned earlier, there is a body of literature focused specifically on teenage sexual, contraceptive and reproductive behavior that suggests that race-ethnic differences may be related to differences in psychosocial, behavioral, and normative factors beyond demographic and socioeconomic factors. For instance, higher self-esteem reduces the risk of a teen pregnancy for Black and Hispanic, but not White, teens (Berry, Shillington, Peak, and Hohman 2000), while religiosity seems more protective for White than Black teens (Manlove, Terry-Humen, Ikramullah, and Moore 2006). Better grades in school reduce the risk of teen pregnancy for White and Black teens, but not Hispanic teens (Manlove 1998). Black youths have sex at younger ages than White and Hispanic youths (Martinez, Copen, and Abma 2011), although both Black and Hispanic youths, relative to non-Hispanic White youths, are less likely to receive formal sex education (Abma et al. 2004). Black and Hispanic teens are also less likely than their White counterparts to negatively view a hypothetical pregnancy (Martinez et al. 2011). Aarons and Jenkins (2002) found, in their study of minority youths, that having sex is supported by peer

norms encouraging sexual activity among both Black and Hispanic youths. Black, compared with White, youths tend to start dating later but begin having sex sooner after they start dating, with Hispanic youths not significantly different from White youths (Longmore, Manning, and Giordano, 2004). Both Black and Hispanic youths viewed early pregnancy as undesirable, but not particularly detrimental to their future, and Black youths' motivation to avoid pregnancy seemed lower than Hispanic youths. Hispanic youths viewed their parents as influential in terms of sexual decision-making but relied on them less for information and advice (Aarons and Jenkins 2002).

The current study draws from, and builds on, this literature on teenage behaviors to examine whether race-ethnic differences in fertility among young adults can be explained by differences in both socioeconomic and psychosocial, behavioral, and normative factors. This research is exploratory in many ways. We generally hypothesize that accounting for a range of factors measured in adolescence (individual religiosity, psychological, and academic factors; sexual experience, knowledge, and attitudes, perceptions of peer sexual behavior and attitudes; and parental discussion about sex) will attenuate the higher likelihood that race-ethnic minorities will have a birth relative to their White counterparts. However, we have no *a priori* expectations regarding whether the various types of psychological, behavioral, and normative factors differ in their association with early fertility, nor do we have expectations as to how much race-ethnic variation may be explained. Further, because existing literature so often focuses on one race-ethnic group (Aarons and Jenkins 2002; Yee and Simon 2010), we have no clear hypotheses as to whether our measures will explain the higher odds of an early birth among minorities overall or potentially explain more of the variation between Black and White or Hispanic and White respondents.

Data

The data are from the Toledo Adolescent Relationship Study (TARS), a longitudinal study based on a stratified random sample of the year 2000 enrollment records of all youths registered for the 7th, 9th, and 11th grades in Lucas County, Ohio. Data from the 2000 U.S. Census indicate that Lucas County's socioeconomic and demographic characteristics are similar to national averages across a number of key domains (marital status, income, education, and racial distribution), and the TARS sample, indicated by the U.S. Census comparisons, parallels the sociodemographic characteristics of the Toledo MSA. The sample is drawn from student rosters (made available through Ohio's Freedom of Information Act) from 62 schools across seven school districts, although respondents did not have to attend class to be in the sample. The sample, devised by the National Opinion Research Center, includes oversamples of Black and Hispanic adolescents, and respondents are from a range of affluent and disadvantaged urban, suburban, and rural neighborhoods. These data are well-suited for our analysis because, to date, few longitudinal data sources include such a wide spectrum of indicators to predict early adult fertility. In the first interview (Wave 1) conducted in 2001, 1,321 adolescents (ages 12-19) participated in the study. Interviews were conducted in the respondent's home using preloaded laptops to administer the interview while maintaining privacy, and a primary caregiver was also interviewed at Wave 1. Subsequent interviews were conducted in 2002, 2004, 2006, and 2010; we use the fourth wave (2006) of data collection to measure fertility behaviors, when the respondents (n=1,092 due to attrition across waves) are ages 17-24. We include both men and women in our study, but we restrict the analytical sample to those who had not had a birth prior to the first wave of data collection to produce a sample size of 1,068. Our dependent variable is whether the respondent ever had a birth or fathered a child; we focus on births rather than pregnancies because pregnancies ending in abortion are notoriously under-reported in survey

data (Jones and Kost 2006). This information comes from the complete fertility histories for both men and women gathered at Wave 4. We imputed missing data using Stata's multiple imputation estimation procedures allowing us to retain 78 cases without full data.

Independent variables

Our primary independent variable is race-ethnicity, categorized as White, Black, and Hispanic; we exclude respondents with either missing race information (n = 4) and those in the "other" race-ethnic category (n = 22) to create a final sample size of 1,042. There are too few immigrants in the sample to account for nativity differences. In addition to the standard demographic variables of age and gender, we have a number of socioeconomic status and family background measures. These include mother's education level (less than high school, high school, some college, college or more), family structure at Wave 1 (both biological parents, stepfamily, single-parent family, other family type), and whether the respondent's mother had a birth as a teen. We include a summary measure taken from the parent interview regarding neighborhood disorganization. This measure is a scaled variable (alpha=0.94) of 10 indicators, asked on a scale of 0=not a problem, 1= a problem, and 2=big problem, "Tell me whether you think the following things are a problem in your neighborhood…": high unemployment; litter or trash on sidewalks or streets; run down and poorly kept buildings and yards; quarrels in which someone is badly hurt; drug use or drug dealing in open; youth gangs; vacant or abandoned houses or storefronts; prostitution; abandoned cars; and graffiti. Higher scores reflect more disadvantaged neighborhoods.

The first set of measures are individual-level indicators reflecting the respondents' religiosity, psychological resources (self-esteem and self-efficacy), and academic performance in adolescence (Wave 1). Religiosity is derived from the question: "How important is religion in your life?" with responses ranging from 1=not at all important to 5= very important; we

dichotomize this variable to indicate very/pretty important or not. Self-esteem is assessed using Rosenberg's six-item scale (Rosenberg et al., 1995), with alpha=0.69. Self-efficacy is a scale of three questions (alpha=0.60), with responses ranging from 1=strongly disagree to 5=strongly agree: "I can do just about anything I really set my mind to"; "I am responsible for my own failures"; and "I am responsible for my own success." Finally, we include a measure of self-reported grades ranging from 1-9, with higher scores representing better grades in school, as a proxy for academic orientation and performance.

The second set of measures consist of individual-level indicators of sexual knowledge and attitudes at Wave 1. Sexual knowledge is measured as whether respondents ever had a sex education class during school, scaling together responses about how much (ranging from 1=nothing at all to 5=very much) was covered in health classes in school on four topics (alpha=0.86): birth control; pregnancy; AIDS and STDs; and abstinence. The indicators of attitudes toward sex and fertility, again measured at the first wave, are how respondents would react if they became pregnant/impregnated someone and a conservative sexual attitudes measure. Reaction to becoming pregnant is based on agreement to the statement "I would be devastated if I got pregnant at this age," measured on a scale of 1=strongly disagree to 5=strongly agree, dichotomized into agree/strongly agree or not. Conservative sexual attitudes is a summary measure based on the responses to 5 questions, also measured on a scale of 1=strongly disagree to 5=strongly agree (alpha=0.65): "A person should only have sex with someone they love"; "A person should only have sex if they are married"; "I would have to be committed to someone to have sex with them"; "I would feel comfortable having sex with someone I was attracted to but did not know very well" (reverse coded); and "It's okay to sometimes date more than one person at a time" (reverse coded). Higher scores reflect more conservative attitudes toward sex. Finally, we measure contraceptive efficacy based on response to the question: "If you were to

become intimate with someone, how sure are you that you could plan ahead to have some birth control available?" Responses include 1=never want to use birth control, 2=never would become intimate with someone before marriage, 3=very unsure, 4=moderately unsure, 5=neither sure or unsure, 6=moderately sure, 7 =very sure. We collapse categories 1 and 2, categories 3, 4, and 5, and categories 6 and 7 to create a three-category variable indicating (1) they are confident they would not need contraception, (2) they are not sure whether they could/would have contraception available if necessary, and (3) they are sure they would have contraception available when needed (omitted).

A third set of measures more directly capture risk and exposure to early fertility: dating and sex experiences. Two measures of early dating experiences were drawn from the Wave 1 interview. The first measure reflects a dating orientation and is based on the questions of whether the respondent is the "type who always has a girl/boy who likes me" or is the "type who always has a girl/boy I like"; we dichotomize this to reflect respondents who strongly agreed or agree with either of these statements. The second measure is a numeric indicator of "in the past year, how many girls/boys did you date?" We establish age at first sex from the Wave 4 interview and dichotomize this into an indicator of whether the respondent had sex at age 15 or younger.

A fourth set of measures is based on information about peers at Wave 1. First, three attitudinal measures were combined regarding respondents' perceptions of their friends' attitudes toward sex to create a measure of peer sexual conservatism. Respondents were asked to think of their friends, and then report how much they think their friends would agree or disagree on a scale of 1=strongly disagree to 5=strongly agree with "It's okay to date more than one person at a time" (reverse coded); "You should only have sex with someone you love"; and "You should only have sex if you are married." Higher scores reflect the perception that friends have more

conservative attitudes toward sexual behavior. Second, we created a dichotomous measure

indicating that respondents believed that most or all of their friends were sexually active at Wave

1.

The fifth set of variables address parental influences on sexual attitudes and behavior.

Two variables come from a parallel survey of primary caregivers, given at Wave 1; for brevity,

we refer to this as the "parental interview" and to these variables as "maternal measures" (90%

of these interviews were with a biological or adoptive mother). Mothers were asked how often

they discussed sex with their child, with response categories of 1=never to 5=very often; we

dichotomize this into discuss sex often/very often or not. Maternal conservative dating attitudes

were derived from the following 7 questions rated on a scale of 1=strongly disagree to

5=strongly agree: (1) "Boys are only after one thing"; (2) "Girls are too aggressive nowadays";

(3) "I think some children have too much freedom to b around the opposite sex"; (4) "Boys and

girls play emotional games with each other"; (5) "I think some parents allow their children too

much freedom to date" (6) "It's better not to get too serious about one boy/girl in high school"

and (7) "Nowadays girls are too boy crazy." These were scaled (alpha=0.78) to create an

indicator in which higher scores reflect parents' conservative attitudes toward adolescent dating.

There are also two measures representing adolescents' Wave 1 perception of their parents'

attitudes towards sex and dating. First, we have a scaled measure of sexual communication

(alpha=0.73) based on agreement with the following statements: "My parents sometimes talk to

me about sex"; "My parents sometimes talk to me about birth control"; and "My parents

sometimes talk to me about waiting to have sex until I am married." Second, frequency of dating

disagreements with parents is drawn from the question, "How often do you and your parents

have disagreements or arguments about your dating" with responses ranging from 1=never to

6=two or more times a week.

Approach

We first present descriptive statistics for our analytical sample by race-ethnicity to explore whether the psychological and academic attributes, knowledge, behaviors, attitudes, and normative factors (along with socioeconomic status) vary across groups. Second, we examine the role of individual psychological, behavioral, peer, and parental influences on the likelihood of having a birth overall, using logistic regression and a series of eight nested models. Model 1 contains the baseline demographic variables (age, gender, race-ethnicity). Model 2 adds socioeconomic status and family background measures to Model 1. Model 3 includes religiosity, psychological, and academic measures to Model 1. Model 4 adds sexual knowledge and attitudes. Model 5 adds dating and sex experiences. Models 6 and 7 include peer and parent indicators, respectively, to Model 1, with Model 8 being the full model.

Results

Descriptive Statistics

Table 1 shows weighted means and percentages of the full analytic sample and by race-ethnicity; sample sizes are not weighted. Significant differences across groups in the distribution of the covariates are indicated by superscripts. The first row of Table 1 indicates the proportion of the analytical sample that reported a birth by Wave 4. Less than a fifth of the sample had a child in early adulthood, with higher levels among Black and Hispanic young adults, consistent with other research. Just over a tenth (13%) of White young adults reported at least one birth by Wave 4, but more than fourth (29%) of Black and about a third (33%) of Hispanic respondents had a child.

In terms of sociodemographic measures the sample is approximately equally split across gender. A little more than two-thirds are White, with just under a quarter of the sample Black and about 7% Hispanic. By wave 4, the average age of the sample is about 20 years old. The

vast majority, 90% of the full sample, has a mother who has at least a high school education and approximately half lived in a two-biological parent home at Wave 1. However, there are significant differences across race-ethnic groups. More White than Black and Hispanic respondents have a mother with at least a college degree, and White respondents are more likely to have lived in a two-biological parent home during adolescence. Nearly a quarter of Black and 40% of Hispanic respondents were living with both parents at the Wave 1 interview. Less than one fifth of the full sample report having a mother who had a child as a teen, but it is considerably higher among Black (31%) and Hispanic (29%) respondents compared with White respondents (13%). Both Black and Hispanic parents report more neighborhood disorganization than White parents, and Black parents also report more neighborhood disorganization than Hispanic parents.

- Table 1 here -

Turning to the psychosocial, religious, and academic indicators, respondents scored relatively high on the self-esteem and self-efficacy scales. Just under half reported at Wave 1 that religion was very or pretty important, but this is significantly higher among Black than White respondents. On average, White respondents reported higher grades than Black or Hispanic respondents. Turning to measures more directly related to sex and pregnancy, the vast majority of the full sample (84%) reported at Wave 1 that they would be devastated if they became pregnant or impregnated someone. However, there are race-ethnic differences – significantly more White respondents reported at Wave 1 that they would be devastated (87%) than either Black (79%) or Hispanic (76%) respondents; the differences between Black and Hispanic respondents are not significant. White, compared with Black or Hispanic, respondents also reported significantly more conservative sexual attitudes (Black and Hispanic respondents did not significantly differ from each other), and White respondents reported receiving sex

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education about fewer topics than either Black or Hispanic respondents did. Regarding

contraceptive efficacy, approximately half of the sample said they were sure they could plan

ahead to have birth control. A little more than a quarter of the sample responded that they would

not use birth control, and about a fifth of the sample said they were not sure if they could plan

ahead to have birth control available, with more Hispanic respondents (29%) significantly less

sure than White respondents (20%) that they could have birth control available.

The findings on early dating and sex experiences indicate that although 40% of the

sample had sex before age 16, significantly more Black (57%) and Hispanic (53%) respondents

had early sex compared with White respondents (32%). Our measure of dating orientation

shows that a higher proportion of Black (40%) compared with White (30%) respondents

mentioned they always had someone of the opposite sex whom either they liked or liked them.

White, compared with Black and Hispanic, respondents reported fewer dating partners in the

year preceding the Wave 1 interview, though only the Black-White difference is significant at

p<.05.

Peer and parental factors also differ across race-ethnic groups. At Wave 1, Black

compared with White or Hispanic respondents reported significantly lower peer conservatism

towards sex. Just over a fifth of the whole sample reported that most or all of their friends were

sexually active, but the proportion was significantly higher among Black (33%) and Hispanic

(27%) respondents compared with White (18%) respondents. Black and Hispanic compared

with White mothers reported greater conservative attitudes toward adolescent dating, with a

significant Black-White difference. Thirty percent of all respondents reported that their parents

often discussed sex with them often, but again, this varied by race-ethnicity. Over half of Black

respondents (52%) reported their parents often discussed sex with them often, but this occurred

among only 32% of Hispanic and 22% of White respondents. Greater shares of Black and

Hispanic adolescents also reported that their parents frequently discussed sex with them than White adolescents. White, Black, and Hispanic respondents all reported that they had very few disagreements or arguments with their parents about dating.

Taken together, the descriptive statistics reveal that Black and Hispanic respondents differ from White respondents in terms of fertility as well as a range of socioeconomic and psychosocial and behavioral factors, and these factors may contribute to race-ethnic differences in early fertility. We turn to multivariate analyses to examine whether these factors are associated with early fertility and whether accounting for socioeconomic, psychosocial, and behavioral factors attenuate race-ethnic differences in childbearing in young adulthood.

Multivariate Results

Table 2 presents logistic regression odds ratios predicting any birth in the full sample. Several nested models are presented, beginning with a baseline model (Model 1). Controlling only for age and gender, Black respondents are more than three times as likely to report a birth in young adulthood than White respondents (OR = 3.19), and Hispanic respondents are nearly four and a half times as likely (OR = 4.48). Women are more than twice as likely as men to report a birth, and the likelihood of a birth increases with age.

Model 2 adds socioeconomic status and family background measures to Model 1, and shows race-ethnic differences are substantially attenuated but remain statistically significant, consistent with prior work. In the presence of socioeconomic and family controls, Black respondents are now only about 62% more likely to have a birth than White respondents, and Hispanic respondents are about 160% more likely to report a birth. Having a mother with a college degree or higher reduces the risk of having an early birth, while living in a stepparent or other family type in adolescence (relative to living with both biological parents) increases the

risk. The more disadvantaged the neighborhood at Wave 1, the more likely the respondent reported a birth by young adulthood.

- Table 2 here -

Model 3, includes psychological measures, religiosity, and academic performance (self-reported grades). Self-esteem, self-efficacy, and religiosity at Wave 1 are not significantly associated with the odds of having a child, but academic performance is associated with lower odds of a birth by young adulthood. The better the grades during adolescence, the less likely young adults are to have an early birth, and the inclusion of grades reduces race-ethnic differences substantially, though they remain significant. In this model, Black respondents are 2.3 times and Hispanic respondents 3.5 times as likely to have an early birth compared with White respondents.

Model 4 includes sexual knowledge and attitudes, in addition to age, gender, and race-ethnicity. In this model, the magnitude of the race-ethnic differences decreases slightly relative to the baseline model, with the odds that Black young adults have had a birth over two times as high as White respondents (OR = 2.89). Hispanic respondents are 4.0 times as likely to have had a birth as White respondents. The extent of sexual education is not significantly associated with the odds of a birth by young adulthood. Respondents who would be devastated by a pregnancy report marginally lower odds of becoming pregnant, and conservative sexual attitudes are also reduce the odds of an early birth. Additionally, contraceptive efficacy predicts early fertility, with respondents with greater contraceptive efficacy having lower odds of having a birth in young adulthood.

Dating behaviors at Wave 1 and early sex are included in Model 5. Men and women who had sex before age 16 are about 3 times as likely to have had a child by young adulthood than those who had not had sex by age 16. The number of dating partners that the adolescent reported

at Wave 1 is positively and significantly associated with early fertility. Race-ethnic differences are attenuated in Model 5 relative to Model 1 but remain fairly large and significant. Relative to White respondents, Black respondents are 2.6 times as likely to report an early birth even after controlling for early sexual debut and multiple romantic partnerships in adolescence; Hispanic respondents are 3.9 times as likely to have an early birth as Whites.

The peer measures are added to Model 6 and demonstrate that both measures are significant independent predictors of early fertility, but they only modestly attenuate race-ethnic differences. Controlling for whether adolescents perceived their peers (at Wave 1) as having conservative attitudes toward sex, and whether adolescents thought most or all of their peers were sexually active, reduces the odds ratio for Black relative to White respondents from 3.19 to 2.66 (remaining significant), with a smaller change for Hispanic respondents (OR = 4.48 and OR = 4.17 from Model 1 to Model 6). However, respondents who reported that their peers had conservative attitudes toward sexual behavior are less likely to have a birth. Conversely, respondents who believed that most or all of their friends were sexually active at Wave 1 are more likely to have a birth.

Parental communication indicators are included in Model 7 and results in similar changes in the race-ethnic odds ratios as Model 5. Accounting for differences in maternal attitudes and interactions regarding sex and dating, Black respondents remain about 2.6 times as likely to have an early birth as White respondents, and Hispanic respondents remain about 4 times as likely. These factors are significant in their own right. Having a mother who reports conservative attitudes toward dating and having a mother who reports discussing sex with their adolescent often or very often both increase the odds of an early birth (OR = 1.35 and OR = 1.73, respectively). The more conflict an adolescent reports having with their parents over dating, the more likely an adolescent is to have an early birth as well (OR = 1.18).

Finally, Model 9 is the full model including all the measures. Black-White differences in early fertility are no longer significant. Further analysis indicates that socioeconomic and family background factors, in conjunction with controls for grades, early dating and sexual experience, and maternal discussions about sex, explain the differences between Black and White respondents; we explore this further below. However, the difference between Hispanic and White respondents remains significant and sizeable. The odds of having a birth in young adulthood for Hispanic relative to White respondents are virtually unchanged from Model 2 and Model 8, indicating that psychological, behavioral, and normative factors do not account for differences between Hispanic and White respondents in the likelihood of early fertility.

The full model shows gender differences are large, with young women, compared with men, about three times as likely to report a birth. Having a college-educated mother remains protective against early fertility relative to those with only a high school degree, and individuals who lived in a stepfamily or an "other" family type during adolescence are more likely to report a birth compared to those who lived in a two-biological parent home. Respondents from more disadvantaged neighborhoods are more likely to report a birth by early adulthood. Respondents who had sex before age 16 are still twice as likely to have report a birth by Wave 4, although the magnitude is reduced relative to Model 5. Peers' sexual attitudes and behaviors are no longer significant in the full model. Only two aspects of parent-child interactions about sex and dating remain marginally significant; frequent discussions about sex, as reported by the mother, is associated with 50% higher odds of having an early birth, as well as parental conflicts with their parents regarding dating.

In models not shown, we explored which variables primarily explained the Black-White difference by adding academic performance, the early sex and dating measures, maternal report of sex communication, and the frequency of parental dating disagreements separately to Model

2. These models showed that Black-White differences became insignificant when either academic grades or the maternal sex discussion variable were included with at least one other measure (early sex, number of dates, or dating disagreements) or when both were entered together. The Black-White difference became marginally significant at p≤.1 when grades, the parent sex discussion measure, or early sex was entered singly, while the difference remained conventionally significant when number of dates or dating disagreement frequency was entered singly.

DISCUSSION

Race-ethnic differences in fertility remain an area of social concern, with higher rates of early childbearing among minorities largely viewed as both reflecting and exacerbating differences in well-being across groups. Despite extensive demographic studies of race-ethnic differences in childbearing behavior, this body of research has largely been unable to explain differences after accounting for socioeconomic and demographic characteristics, attributing the remaining variation across Black, White, and Hispanic young adults to vague notions of differences in culture, attitudes, and behaviors (Lichter et al. 2012; Sweeney and Raley 2014). The public health field has done a better job of focusing on specific attitudes, beliefs, and behaviors among minorities, but the bulk of this research has used small, cross-sectional, and non-representative studies of *only* minorities or disadvantaged individuals (e.g., Aarons and Jenkins 2002; Afable-Munsuz, Speizer, Magnus, and Kendall 2006; Kendall, Afable-Munsuz, Speizer, Avery, Schmidt, and Santelli 2005). As such, it remains unclear whether the attitudes, beliefs, and norms of minorities are sufficiently different from those of White individuals to actually contribute to race-ethnic differences in fertility.

Another drawback is the overwhelming focus on teen childbearing. Studies show that early childbearing in the teen years is negatively associated with parental, family, and child well-

being (Ng and Kaye 2012a, 2012b); as such, there is a large literature focusing on the antecedents and correlates of teen childbearing (Kirby 2007; Kirby, Lepore, and Ryan 2005). It seems likely, though, that fertility in the early twenties is similarly problematic, given the lengthening of the transition to adulthood (Settersten and Ray 2010). Today, young people in their late teens and twenties are unlikely to have stable jobs, stable incomes, or stable relationships, making childbearing during this time period nearly as disadvantageous for children and adults as teenage childbearing. Yet few studies have examined the entrance into parenthood through the early twenties. This is an important oversight because parenthood during the transition to adulthood can possibly have a ripple effect on subsequent life course transitions, yet it also is a more normative and common behavior.

In this paper, we sought to address these gaps by unpacking the black box of residual race-ethnic differences using longitudinal data with a rich set of individual psychological and behavioral measures, along with normative peer and parental measures, to examine fertility in the late teens and early twenties, focusing on whether such factors explain the higher risk of early childbearing among Black and Hispanic relative to White young adults after accounting for socioeconomic and demographic differences. Prior work has largely focused solely on socioeconomic and demographic characteristics, and while these factors are strongly associated with early childbearing and explain much of the elevated risk among minorities, they do not completely explain differences (Landale and Oropesa, 2007; Lichter et al. 2012). Using unique data, we were able to incorporate attitudinal, psychological, behavioral, and normative factors (measured prior to any fertility) and account for differences in the broader contextual environment in which young adults make sexual, contraceptive, and reproductive decisions. The potential influences of peers and parents in adolescence, which is rarely captured in demographic

data, may shape the social context and normative environment in which young people make decisions about sex, contraception, and reproduction.

As expected, when controlling for socioeconomic status and family background, we were able to reduce but not eliminate the Black-White difference. We did not find evidence that psychological resources, such as self-esteem and self-efficacy, contributed to race-ethnic differences. Rather, more tangible adolescent and parenting behaviors mattered; specifically, the inclusion of academic performance, early sex and dating experiences, and the frequency of discussion about sex with mothers, further reduced and eliminated the Black-White difference. This suggests that the normative environment in the family, along with attitudes and behaviors, strongly influences sexual, contraceptive, and reproductive behaviors among Black young adults. However, we did not find this same result for Hispanic young adults. The measures of academic performance, early dating and sexual experiences, and parental norms regarding sex, which further reduced the Black-White difference after accounting for socioeconomic factors, did not have the same effect for Hispanics, leaving a sizeable Hispanic-White difference. Ironically, then, we are forced to follow the path of other researchers – those we have commented on – in suggesting that there are still some unmeasured characteristics that contribute uniquely to early fertility among Hispanic young adults. Although our research was unable to identify such factors, one potential explanation may be that compared to their White counterparts, Hispanic young adults (particularly the foreign-born) place a higher value on family and childbearing (Landale and Oropesa 2007). They form coresidential unions at younger ages (Copen, Daniels, and Mosher 2013; Payne 2012), increasing the likelihood of a birth, and are more likely to believe that all children are a blessing and that the timing of pregnancies is largely a matter of fate rather than conscious control (Guzzo and Hayford 2012; Hayford and Guzzo 2013).

While this paper offers new contributions to our assessments of racial and ethnic variation in fertility, there are some limitations to the analysis. The measure indicating that the mother reports frequent discussion of sexual matters does not provide information on the context of these discussions. Supplementary results suggest it is likely that mothers discuss sex frequently *because* their child is already (or perceived to be) sexually active; the lack of a significant negative association between frequency and an early birth then suggests that these discussions are not leading to a reduction in risky sexual behavior, perhaps because of the content or nature of these discussions. For instance, some parents may be dominating such talks, with more of a lecturing style of conversation (Lefkowitz et al. 2000), rather than maintaining open lines of communication in which adolescents feel able to ask questions and discuss concerns (Hutchinson 2000). Another limitation is that although we have a rich set of individual attitudinal and normative variables than available in other datasets with fertility information, we did not have broad, general measures of cultural characteristics about family, childbearing, or other such norms. Further, in this analysis, we were only able to examine births, not pregnancies, nor did we explore the mechanisms leading to births; that is, we are not examining race-ethnic differences in sex, contraceptive behavior, or abortion. As such, we cannot determine through which particular mechanisms the behavioral and normative factors operate. For instance, we cannot ascertain whether perceiving that many of one's peers are sexually active at a young age leads to earlier sex, increases the number of sexual partners, decreases contraceptive use, or influences decisions to carry a pregnancy to term, but any of these mechanisms ultimately affect the risk of a birth. Differences in unmeasured attitudes or differences in concrete behavior, such as lower rates of contraceptive use, may contribute to the Hispanic-White gap. Another set of limitations is more directly associated with the sample.

Although the current sample's demographic profile reflects that of the United States in general, our sample is not nationally representative and thus its generalizability is unclear.

This study demonstrates that many factors influence fertility in emerging adulthood. As seen in prior work on teen fertility and other fertility indicators, the biggest factor contributing to race-ethnic differences in early fertility are differences in the socioeconomic profile of Black, White, and Hispanics young adults. However, while socioeconomic factors play a large role, residual differences remain. It is not until we move beyond such factors to include measures reflecting the broader context in which young men and women make decisions about sex, contraception, and childbearing that we can largely attenuate the differences between Black and White early births.

Beyond social class and family background differences, young Black men and women engage in sexual and reproductive behavior in a different behavioral and normative environment than their White peers – they perform less well in school, take on adult sexual behaviors earlier, and their parents discuss sex more frequently with them. These different behaviors and contexts, in turn, increase the risk of early childbearing. As such, programs aimed at helping Black teens and young adults cope with potential pressures to have sex and engage them more academically, along with improved efforts to help parents keep their children engaged in school and, potentially, encourage parents to maintain open lines of communication about sex and dating rather than issuing directives, may further reduce early fertility among all race-ethnic groups. Having said that, efforts to improve the socioeconomic status of the families in which Black youths grow up and providing greater educational and employment opportunities is likely to have a far greater impact.

Unlike the differences between Black and White young adults, the factors considered here did little to attenuate the differences between Hispanic and White young adults. Clearly,

then, other factors contribute to the elevated risk of early fertility among Hispanic young adults, and further research is needed to identify these factors. At the same time, though, it is worth noting that accounting socioeconomic factors did substantially reduce the differences between Hispanics and Whites. Thus, as with Black young adults, efforts to improve the socioeconomic status of Hispanic families and investments in education and employment opportunities would likely go a long way to reducing the high rate of early fertility among Hispanic young adults.

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Table 1. Descriptive Characteristics According to Race-Ethnicity (n-1042)

	Total (n = 1042)	White (n = 686)		Black (n=241)		Hispanic (n=115)	
Had a birth[a,b]	17.8	12.5	50.6	28.7	50.6	**53.5**	50.6
Sociodemographic indicators							
Gender							
Male	50.5	50.6		53.3		51.8	
Female	49.5	49.4		46.7		48.2	
Race-ethnicity							
White	68.6						
Black	24.4						
Hispanic	7.0						
Age	20.3(.05)	20.3(.07)		20.3(.11)		20.1(.17)	
Socioeconomic & family characteristics (W1)							
Mother's Education (W1)							
High school[b]	32.7	31.5		34.0		39.5	
Less than high school[a,b,c]	9.7	6.1		14.1		29.1	
Some college[a,b,c]	34.4	32.7		42.6		22.9	
College or more[a,b]	23.2	29.6		9.3		8.5	
Family structure (W1)							
Two-biological parents[a,b,c]	52.7	63.4		26.4		39.3	
Step-parent[b]	13.3	12.2		13.8		21.5	
Single-parent[a,b,c]	21.9	15.5		39.2		24.6	
Other family[a]	12.1	8.9		20.6		14.5	
Mother had a teen birth (W1) [a,b]	18.6	13.2		30.7		28.7	
Neighborhood disorganization (W1)[a,b,c]	2.5(.14)	1.5(.12)		4.9(.36)		3.2(.45)	
Psychological, religious, & psychosocial indicators (W1)							
Self-esteem scale	3.9(.02)	3.9(.13)		4.8(.36)		3.2(.45)	
Self-efficacy scale	4.0(.02)	3.9(.02)		4.0(.04)		4.0(.06)	
Religiosity[a]	46.8	42.1		58.6		51.4	
Academic Performance [a,b]	6.2(.07)	6.6(.08)		5.4(.13)		5.4(.20)	
Sexual knowledge & attitudes (W1)							
Sex education[a,b]	3.17(.03)	3.1(.04)		3.3(.08)		3.3(.11)	
Devastated if got pregnant[a,b]	83.9	86.5		78.9		75.9	
Conservative sexual attitudes scale[a,b]	3.8(.03)	3.9(.03)		3.5(.05)		3.6(.09)	
Contraceptive efficacy							
Sure could have birth control	50.1	52.1		46.8		42.2	
Not sure could have birth control[b]	21.5	20.0		23.8		28.8	
Would not use birth control/have sex	27.4	27.3		27.8		27.1	
Sex & dating behaviors							
Early sex[a,b]	39.6	32.1		56.6		53.3	
Dating orientation (W1) [a]	30.5	30.0		40.2		31.8	
Number of people dated in past year (W1)[a]	2.5(.16)	2.3(.13)		2.9(.28)		3.3(.49)	
Peer sexual indicators (W1)							
Peers' sexual conservatism[a,c]	3.4(.03)	3.5(.03)		3.0(.06)		3.4(.09)	
Peers' sexual behavior[a,b]	22.0	17.6		33.0		27.0	
Parent indicators (W1)							
Maternal conservative dating attitude[a]	3.6(.02)	3.6(.02)		3.7(.04)		3.7(.06)	
Maternal report of communication about sex[a,b,c]	30.0	22.0		51.7		32.4	
Adolescent report of communication about sex[a,b]	3.0(.03)	2.9(.04)		3.3(.06)		3.1(.09)	
Adolescent report parental dating disagreement	1.8(.04)	1.8(.04)		1.8(.08)		1.9(.11)	

[a] Blacks differ significantly than Whites at p≤.05 [b] Hispanics differ significantly than Whites at p≤.05 [c] Blacks differ significantly from Hispanics at p≤.05
Source: Toledo Adolescent Relationship Study.
Note: W1 denotes Wave 1 measure.

Table 2. Logistic Regression Odds Ratios Predicting a Birth by Young Adulthood (N=1042)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Sociodemographic indicators								
Female	2.34***	2.34***	3.05***	2.80***	2.90***	2.90***	1.95***	2.80***
Race-ethnicity								
(White)								
Black	3.19***	1.62*	2.31***	2.89***	2.60***	2.66***	2.57***	1.24
Hispanic	4.48***	2.63***	3.52***	4.04***	3.85***	4.17***	4.02***	2.36**
Age	1.33***	1.38**	1.36***	1.28***	1.41***	1.22***	1.35***	1.42***
Socioeconomic & family characteristics (W1)								
Mother's education (W1)								
(High school)								
Less than high school		1.42						1.36
Some college		.87						.89
College or more		.33**						.39**
Family structure (W1)								
(Two-biological parents)								
Step-parent		2.00**						1.84*
Single-parent		1.42						1.24
Other family		2.89***						2.49**
Mother had a teen birth (W1)		1.34						1.10
Neighborhood disorganization (W1)		1.09***						1.08***
Psychological, religious, & psychosocial indicators (W1)								
Self-esteem scale			1.10					1.00
Self-efficacy scale			1.23					1.25
Religiosity			.94					1.16
Academic Performance			.74***					.86**
Sexual knowledge & attitudes (W1)								
Sex education				1.03				.98
Devastated if got pregnant				.67^				.83
Conservative sexual attitudes scale				.77*				1.25
Contraceptive efficacy								
(Sure could have birth control)								
Not sure could have birth control				.80				.71
Would not use birth control or have				.67^				.81
Sex & dating behaviors								
Early sex					2.91***			2.09***
Dating orientation (W1)					1.27			1.06
Number of people dated in past year (W1)					1.08**			1.07**
Peer sexual indicators (W1)								
Peers' sexual conservatism						.79*		.83
Peers' sexual behavior						1.93**		1.22
Parent indicators (W1)								
Maternal conservative dating attitude							1.35*	1.08
Maternal report of communication about sex							1.73**	1.47^
Adolescent report of communication about sex							1.11	1.03
Adolescent report parental dating disagreement							1.18*	1.13^
F	24.62***	11.85***	15.92***	11.86***	18.67***	18.78***	14.36***	5.57***

^p≤.1; *p≤.05; **p≤.01; ***p≤.001

Source: Toledo Adolescent Relationship Study

Note: Reference category in parentheses. W1 denotes indicator measured at Wave 1