Understanding multiple levels of norms about teen pregnancy and their relationships to teens' sexual behaviors☆

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A B S T R A C T

Researchers seeking to understand teen sexual behaviors often turn to age norms, but they are difficult to measure quantitatively. Previous work has usually inferred norms from behavioral patterns or measured group-level norms at the individual level, ignoring multiple reference groups. Capitalizing on the multilevel design of the Add Health survey, we measure teen pregnancy norms perceived by teenagers, as well as average norms at the school and peer network levels. School norms predict boys' perceived norms, while peer network norms predict girls' perceived norms. Peer network and individually perceived norms against teen pregnancy independently and negatively predict teens' likelihood of sexual intercourse. Perceived norms against pregnancy predict increased likelihood of contraception among sexually experienced girls, but sexually experienced boys' contraceptive behavior is more complicated: When both the boy and his peers or school have stronger norms against teen pregnancy he is more likely to contracept, and in the absence of school or peer norms against pregnancy, boys who are embarrassed are less likely to contracept. We conclude that: (1) patterns of behavior cannot adequately operationalize teen pregnancy norms, (2) norms are not simply linked to behaviors through individual perceptions, and (3) norms at different levels can operate independently of each other, interactively, or in opposition. This evidence creates space for conceptualizations of agency, conflict, and change that can lead to progress in understanding age norms and sexual behaviors.

1. Introduction

Family formation in the United States has changed rapidly in recent decades. About 40% of births now occur outside of marriage, and Americans' ages at first marriage and first birth have risen steadily (Hamilton, Martin, & Ventura, 2010). Headlines regularly remind us that just half of American adults are now married (Cohn, Passel, Wang, & Livingston, 2011). Since the mid-twentieth century, the life course has become more individualized, with greater diversity in the timing and ordering of life transitions (Rindfuss, Swicegood, & Rosenfeld, 1987; Settersten, 2004; Shanahan, 2000). Alongside these demographic shifts have come changes in age norms about the timing and ordering of parenthood and marriage. Survey data have found that a majority of older Americans do not find nonmarital childbearing to be morally acceptable, but

most younger Americans do (Taylor, Funk, & Clark, 2007). Teenagers' behaviors are regulated by these changing normative messages. Even though the rate of sexual activity among U.S. teenagers has been fairly consistent for the past 50 years (Furstenberg, 2003), and although American teens have lately begun having sex at older ages and contracepting more consistently (Hoffman, 2008), teen sexuality, pregnancy, and parenthood continue to be major social issues today. Nearly 80% of adults in a national poll considered teen pregnancy to be an "important" or "very serious" problem in the United States (Science and Integrity Survey, 2004). Yet teen pregnancy occurs within a local social context that comes with its own norms—norms that can vary considerably from one place to another. These normative contexts surrounding teens may be important for understanding not only teens' sexual behaviors, but also the consequences of these behaviors.

Despite their importance, social norms are difficult for social scientists to conceptualize and measure. Like other sociologists, we define social norms as group-level expectations of appropriate behavior that lead to negative sanctions when violated (Marini, 1984; Settersten, 2004). As such, norms cannot be adequately captured by measuring the population-level prevalence of a behavior; most adults may drink coffee, but that does not mean tea drinkers face negative social sanctions (Marini, 1984). Although social norms are a social phenomenon in reference to a specific social group, extant quantitative research usually measures them at the individual level. Similarly, norms are theorized to be held by a particular reference group such as a friendship group or a family, but existing individual-level measures often leave the reference group unspecified. Our study addresses these limitations by measuring teen pregnancy norms at the group level and considering multiple reference groups simultaneously. Capitalizing on the multiple social contexts assessed in the Add Health survey, we assess the relationships between teens' sexual behaviors and both schools and peer networks. Our novel network-based measure of peer context captures the key influence of close friends while also considering the important "wider circle of friends" (Giordano, 1995). Importantly, our study is the first to compare the relative influences of school and peer norms, as well as norms perceived by individuals, concurrently and interactively. Sexual intercourse and contraception are interrelated behaviors leading to pregnancy that may be associated differently with norms, so we analyze both.

This research is important because in recent years, social norms have become an "elephant in the room" for researchers working to understand relationships between social contexts and individual behaviors: Most would agree that norms matter, but difficulties with conceptualizing and measuring norms have led to criticisms (e.g., Marini, 1984). We argue that measuring norms at the level of important reference groups and modeling their associations with behavior is an important first step in addressing these criticisms and working to understand the role of norms in shaping human behavior. Researching norms about teen pregnancy is also empirically important

because of its high prevalence in the United States, its negative consequences for young mothers, fathers, and children, and its concentration in already marginalized segments of the population (Furstenberg, 2007; Hoffman, 1998; Levine, Pollack, & Comfort, 2001; Pirog & Magee, 1997). To understand the implications of a teen pregnancy, we must think of it as a social phenomenon embedded in normative contexts that are linked to individual perceptions and behaviors. In this paper, we contribute to this situated conceptualization of teen sexual behavior by addressing the following three questions: *First*, how are school-level and peer-level average norms about teen pregnancy related to the perceived norms about teen pregnancy of individual teenage boys and girls?[1] *Second*, how are teen pregnancy norms at the school and peer network levels associated with teenage boys' and girls' sexual behaviors (sexual intercourse and contraceptive use) beyond their implications for individual-level norms? *Third*, do different levels of norms interact in their relationship with teens' behaviors?

2. Background

The idea that social norms are related to behavior has a long history (Durkheim, 1951[1897]; Merton, 1968). Although it was a core part of structural functionalist thought, the concept of norms was criticized in later decades for lacking adequate conceptualizations of agency, conflict, and change (Horne, 2001; Vaisey, 2009). Today, qualitative researchers tend to talk about culture rather than norms when articulating social processes (Fine, 2001), and demographers either infer norms from prevalent behaviors or struggle with measuring the group-level constructs of norms and sanctions using individual-level instruments such as surveys (Settersten, 2004). Extant research that directly measures norms instead of assuming their existence tends to assess individual-level embarrassment about a behavior, social sanctions, or ideal behaviors whose violation may not be accompanied by sanctions (Billari & Liefbroer, 2007; Settersten, 2004).

Pregnancy norms are part of an important subgroup of social norms that interests scholars of the life course: age norms (Liefbroer & Billari, 2010; Neugarten, Moore, & Lowe, 1965; Settersten, 2004). Age norms regulate the timing of a behavior's occurrence in the life course and its ordering relative to other life transitions like marriage and establishing financial independence. Norms regulating pregnancy are clearly age-graded—social norms do not typically discourage childbearing when it occurs in adulthood and after transitioning to marriage and financial independence.

Past research has documented norms discouraging teen pregnancy among U.S. adults (Cherlin, Cross-Barnet, Burton, & Garrett-Peters, 2008; Mollborn, 2009), and

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[1] Ideally we would have included family and neighborhood norms as well as school and peer norms. Family norms' high correlation with personal norms prohibited their use, and residential census tracts contained too few respondents on average to meaningfully aggregate norms.

teenagers typically also feel that pregnancy would be embarrassing and a bad idea (Brückner, Martin, & Bearman, 2004; Mollborn, 2010). This research, in combination with local ethnographic studies (e.g., Burton, 1990; Edin & Kefalas, 2005; Gregson, 2009; Jacobs, 1994; Kaplan, 1997; Ladner & Gourdine, 1984), has identified considerable variation in norms across population subgroups and localities in norms about teen pregnancy. Generally, socioeconomic and racial/ethnic groups with higher prevalence of teen childbearing (Hamilton, Martin, & Ventura, 2007) also have weaker norms against teen pregnancy (Mollborn, 2009, 2010). Despite this variation in norms and behaviors, teen pregnancy and childbearing are remarkably prevalent in the United States, more so than in other developed countries (Darroch, Singh, & Frost, 2001). Nearly one in three girls gets pregnant before age 20, and more than one in six has a teenage birth (Hoffman, 2008; Perper & Manlove, 2009).

Some past research on teen sexual behavior has inferred the presence of social norms from patterns of behavior in a population, rather than documenting those norms (e.g., Bearman & Brückner, 2001; Brewster, 1994; Sucoff & Upchurch, 1998). Other work has focused on the closely related concepts of frames and scripts (Harding, 2007). Additional research on sexual behavior has measured embarrassment to indicate a perceived norm violation, as we do here (Cherlin et al., 2008; Herold, 1981; Mollborn, 2009, 2010). Rather than representing an attitude, embarrassment is a social emotion that is generated by the actual or imagined presence of others (Berthoz, Armony, Blair, & Dolan, 2002). Therefore, it provides a convenient method to assess a person's perceptions that she may be violating behavioral expectations, and it echoes sociological definitions of norms (Cooley, 1902) because as an informal social sanction, embarrassment regulates behavior (Keltner & Buswell, 1997; Staller & Petta, 2001). Researchers in sociology and related fields have therefore used embarrassment to indicate the presence of a norm (Elster, Lamb, Tavare, & Ralston, 1987; Goffman, 1967; Keltner & Buswell, 1997; Staller & Petta, 2001; Wooten, 2006). Personal embarrassment has been linked to decreased likelihoods of inconsistent contraception (Herold, 1981) and experiencing a teen pregnancy (Mollborn, 2010).

Most importantly, no research we have found has measured age norms (rather than aggregated behaviors) at the group level or distinguished among different reference groups' norms. Yet perhaps more than norms regulating other behaviors, teen pregnancy norms might be expected to have distinct behavioral implications in different reference groups. Research has shown that many teens get inconsistent or even contradictory messages about sex, contraception, pregnancy, and abortion from schools, peers, and family members (Bearman & Brückner, 2001; Sennott & Mollborn, 2011). Opposing normative pressures from influential reference groups, or "systems" of "competing norms," are known to exist but have rarely if ever been documented empirically (Hechter & Opp, 2001). Disentangling their associations with behavior is an important task, and teen pregnancy is an interesting case for accomplishing this.

Like other quantitative data, ours cannot measure different reference groups' norms directly; rather, we aggregate the embarrassment at the prospect of a teen pregnancy perceived by individual teens in a respondent's school and in her peer network. We argue that these measures improve on previous group-level measures of prevalent behaviors to infer norms. The respondents' reports of their embarrassment do not specify a particular reference group for their embarrassment; rather, they likely reflect the teen's belief about what most people would think. Previous research has shown these beliefs to be important because individuals perceive them as consensual, a key feature of status beliefs (Correll & Ridgeway, 2003). Studies have shown that consensual beliefs about what "most people" think affect individuals' evaluations and behavior, even when these beliefs conflict with the individual's own personal beliefs (Sechrist & Stangor, 2001). If a majority of teens in a respondent's peer network report embarrassment at the prospect of a teen pregnancy, this consensual belief will be reflected in our aggregate measure.

In many cases, the conflicting normative messages teenagers receive target different behaviors that can lead to teen childbearing. Penile-vaginal intercourse, contraception, pregnancy, abortion, adoption, and parenthood are distinct links in a chain of behaviors related to teen pregnancy. Just a quarter of American teens have had sex before age 16, but nearly three out of four do so by 19 (Hoffman, 2008). Teens' contraceptive use lags behind that in other countries (Darroch et al., 2001). Of girls who become pregnant, about one in three has an abortion, but adoption is extremely rare (Hoffman, 2008). Sexuality norms communicated to teens often focus on particular behaviors in this chain. Past research has identified two important norms related to teen pregnancy (Sennott & Mollborn, 2011): a norm discouraging teen sex (often based on a moral justification), and another encouraging contraception (frequently with a practical justification so that teens can avoid negative consequences of sex). A teen reporting embarrassment at the prospect of a teen pregnancy may be embarrassed because a pregnancy would be evidence that she had sex, or that she did not contracept effectively, or there may be a distinct norm explicitly regulating teen pregnancy. Our data do not permit us to disentangle these norms here, but norms discouraging teen sex and encouraging contraception should by definition also discourage teen pregnancy.

Bearman and Brückner's (2001) article on the behavioral effects of virginity pledges, which may be seen as a public commitment to an anti-premarital sex norm, found that pledgers delayed sexual intercourse but had a decreased likelihood of contraceptive use when intercourse eventually occurred. They also found that school context mattered for understanding the behavioral effects of virginity pledges: When a pledger was part of an "identity movement" of peers who represented a minority of the school population, the pledge regulated behavior most strongly. These findings suggest that research on teen sexuality norms should consider both individual and group contexts, should consider peer groups nested within

school contexts, and should analyze teen sex and contraception separately. We address each of these goals here.

The multiple social contexts captured by the Add Health survey design allow us to analyze not only norms about teen pregnancy perceived by respondents (i.e., embarrassment at the prospect of a teen pregnancy), but also norms averaged at the school and peer network levels. Schools and peers loom large in teenagers' everyday lives. U.S. high schools are often cohesive social contexts with their own cultures (DiMaggio, 1982), and they are composed of arrays of peer networks whose norms may reinforce or conflict with school-level norms (Eckert, 1989; Pascoe, 2007). Other social contexts in teenagers' lives, such as families and neighborhoods, are also important. Directly comparing schools and neighborhoods, Teitler and Weiss (2000) found that schools' influence on teens' sexual behavior was greater than that of neighborhoods. The authors called for increased attention to school-level normative environments in studies of teens' sexual behavior, but little research has accomplished this. We directly address this limitation in our paper.

To summarize, our study breaks new ground by measuring norms about teen pregnancy rather than aggregated behaviors, analyzing these norms at the group and individual levels, and jointly considering the influential reference groups of schools and peers. This population perspective allows us to assess differences in social contexts that in future research could extend to other social contexts beyond peers and schools. Our embarrassment measure, rather than tapping into a personal attitude about teen pregnancy, more closely aligns with the concept of a norm because it captures group members' anticipated reactions to a behavior. Previous research points to the critical role of school contexts as independent determinants of sexual behaviors (Fletcher, 2007) and the interactive role between different levels of social influence (Bearman & Brückner, 2001; Manlove, Ryan, & Franzetta, 2007), but extant research has not: (a) characterized variation in teen pregnancy *norms* across social contexts, (b) explained the simultaneous associations between both *individually perceived* and *group-level* norms and sexual behaviors leading to pregnancy, or (c) critically evaluated the role of gender in this dynamic, multilevel, and multidimensional process.

Our analyses consider boys and girls separately for multiple reasons. First, the consequences of teen pregnancy are usually greater for girls than boys: Pregnant teen girls' bodies publicly announce their norm violation, and societal norms prescribe greater involvement in and responsibility for parenting among women. Second, the sexual double standard, sexual gatekeeping norms, and norms about female responsibility for contraception all make it likely that normative pressures regulate girls' sexual behavior more strictly (Risman & Schwartz, 2002). Surprisingly, previous research has found that for both genders there is an equally strong positive relationship between embarrassment at the prospect of a pregnancy and the likelihood of subsequently experiencing one (Mollborn, 2010). Third, contextual normative influences may operate differently for boys and girls. Friends may have more important implications for girls' norms and

sexual behavior than for those of boys because of the importance of relational aggression as social control among female peers (Crick & Grotpeter, 1995). Analyzing girls and boys separately permits a comparison of different reference groups' norms and their consequences.

3. Methods

3.1. Data

This study used Wave I and II data from the National Longitudinal Study of Adolescent Health (Add Health; Udry, 1998). Add Health has a variety of unique design features that made our study possible: It was longitudinal, nationally representative, and school-based; collected social network information from an individual's friends and classmates; and collected information on sexual behaviors. In 1994, 90,118 seventh- through twelfth-graders from 134 schools completed in-school questionnaires and nominated up to 5 male and 5 female friends within the school. 20,747 respondents were subsequently interviewed in their homes in 1995 (Wave I). A year later, almost 15,000 in-home respondents (excluding Wave I high school seniors and the oversample of disabled students) were re-interviewed in their homes (Wave II). We can thus capture the longitudinal relationship between norms and controls from Wave I and sexual intercourse and contraceptive use in the following year. We constructed our analytic sample of 3879 respondents from the Wave II in-home sample. The embarrassment measures were usually not asked of respondents younger than 15 for sensitivity reasons, and to have a peer norm measure, a student must have had a friend in the Wave I in-home sample.[2] In some schools, all of a respondent's in- or out-nominated friends would have completed the in-home interview, while in others, only some or possibly none did. If friends were younger than 15, they would not have answered the norm question and would have been excluded from our sample. Thus, students who are excluded from our sample as "social isolates" (e.g., not having friends' norms available from the in-home survey) may truly have had no friends, or their friends may simply not have been selected for the in-home survey or been old enough for the norm question. The vast majority of these students fell in the latter two groups.[3] Thus our sample necessarily excludes more students from Add Health schools that had fewer students selected for in-home interviews. Because of the sample's selectivity on the peer

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[2] We computed unweighted descriptive statistics for the Wave I in-home sample ($N = 20,745$), those with available Wave I peer norm measures ($N = 10,975$), and our Wave II analytic sample ($N = 3879$). The analytic sample contained a slightly higher proportion of Asian-ethnicity respondents and a slightly lower proportion of black respondents. Moreover, our analytic sample was somewhat more likely to be embarrassed at the prospect of a teen pregnancy. Comparing our analytic sample to excluded cases who participated in both waves and answered the norm question, our sample was significantly less likely to have had sex (50% versus 59%) and more likely to have used contraception (74% versus 71%).

[3] Only 244 of the eligible cases were "true" social isolates who nominated no friends and had no school peers nominate them as a friend.

Table 1

Descriptive statistics for independent variables used in analyses, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996.

Variable	Category	N	Proportion embarrassed	Pr<	Proportion had sex by Wave II	Pr<	Proportion contracepted at last sex, Wave II	Pr<
School-level embarrassment	Low	1269	0.53	0.00	0.59	0.00	0.72	0.54
	Average	1306	0.68		0.54		0.75	
	High	1304	0.79		0.42		0.77	
Peer-level embarrassment	Low	1293	0.52	0.00	0.66	0.00	0.73	0.34
	Average	1293	0.72		0.50		0.75	
	High	1293	0.81		0.39		0.78	
Gender	Male	1803	0.68	0.14	0.48	0.02	0.76	0.61
	Female	2076	0.71		0.53		0.74	
Race/ethnicity	NH White	1964	0.75	0.00	0.49	0.00	0.78	0.00
	Asian	385	0.75		0.24		0.51	
	Hispanic	741	0.58		0.49		0.68	
	NH Black	656	0.49		0.67		0.72	
	Native American	133	0.66		0.55		0.62	
Age in years at Wave I	≤14	601	0.80	0.00	0.35	0.00	0.68	0.17
	15	1310	0.71		0.44		0.79	
	16	1297	0.65		0.59		0.74	
	17	559	0.62		0.62		0.76	
	≥18	112	0.61		0.73		0.74	
Scriptural inerrancy	Yes	2666	0.70	0.63	0.53	0.22	0.72	0.02
	No	1213	0.69		0.49		0.8	
Born-again Christian	Yes	1023	0.70	0.63	0.45	0.12	0.75	0.98
	No	2856	0.69		0.52		0.75	
Maternal education (College ed.)	Yes	1421	0.77	0.00	0.42	0.00	0.79	0.06
	No	2458	0.65		0.55		0.73	
Born in the United States	Yes	3484	0.69	0.17	0.52	0.00	0.75	0.04
	No	395	0.75		0.26		0.63	
Lives with both parents	Yes	2892	0.72	0.00	0.46	0.00	0.77	0.08
	No	987	0.60		0.64		0.7	
Income to needs ratio	<200%	1168	0.59	0.00	0.58	0.00	0.72	0.11
	≥200%	1789	0.76		0.46		0.79	
	Missing	922	0.67		0.52		0.72	
In a romantic relationship	Yes	2301	0.66	0.00	0.70	0.00	0.75	0.93
	No	1578	0.72		0.36		0.75	
Number of friendship nominations from peers	Low	1015	0.62	0.00	0.47	0.01	0.71	0.12
	Average	1414	0.67		0.47		0.74	
	High	1450	0.75		0.55		0.78	
Racial composition of school	<25% Black	3073	0.72	0.00	0.47	0.00	0.76	0.28
	≥25% Black	806	0.58		0.61		0.72	

Notes: N = 3879. Analyses adjust for complex survey design (clustering, stratification, and probability weights). Variables divided into low, average, and high split the continuous measure into three equally sized groups of respondents.

network measures, we do not consider our sample nationally representative.

3.2. Measures

3.2.1. Teen pregnancy norms

See Table 1 for descriptive information about all variables. At Wave I teens responded to this statement: "If you got [someone] pregnant, it would be embarrassing for you" ("someone" was omitted for girls). Response options ranged from 1 ("strongly disagree") to 5 ("strongly agree"). Other questions we did not analyze addressed individual teen pregnancy attitudes rather than embarrassment, which instead measures an anticipated social reaction from violating a norm.

At the *individual* level, this measure was recoded into 1 for embarrassed (strongly agree or agree) or 0 for not embarrassed (strongly disagree, disagree, or neither agree nor disagree).[4] At the *school* level, we calculated the proportion of embarrassed students. At the *peer* level, we created a new measure from the in-school survey's social network data that weighted friends based on geodesic distance. The geodesic distance between any

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[4] Because disagreeing about being embarrassed could mean either a lack of a norm or a norm promoting teen pregnancy, we do not break out disagreement separately but rather focus on agreement, which indicates the presence of a perceived norm against teen pregnancy (author citation).

two respondents in the same school was the number of degrees of separation between them. Someone listed as a respondent's own friend had a geodesic distance of 1, a friend's friend had a distance of 2, and so on. Two respondents with no connection had a distance of infinity. The weights were the inverse of the geodesic distance between individuals, so close friends had a weight of 1, friends of friends had a weight of ½, and so on through 0 for unconnected respondents. To maximize sample size, we coded both people who nominated a respondent as a friend and friends nominated by the respondent as friends. We argue that this measure of peer influence is useful because it incorporates norms among both close friend and more distantly connected peers. This measure captures the broader peer context that is important for understanding teens' social environments (Giordano, 1995) but still prioritizes norms perceived by close friends.

3.2.2. Teen sexual behaviors

We analyzed two sexual behaviors, measured a year after norms were measured: penile-vaginal intercourse and contraceptive use at last intercourse. Teens reported whether they had ever had penile-vaginal intercourse. Teens who had ever had heterosexual sex (n = 1895) were divided into two groups based on whether they or their partner had used any type of contraceptive at most recent sexual intercourse, not including rhythm method or withdrawal. Additional analyses reported in Appendix A (Table A1) restricted the sample to teens who had never had sex at Wave I, predicting their personal embarrassment and their Wave II likelihoods of sexual intercourse and contraceptive use.

3.2.3. Control variables

Individual- and school-level control variables were chosen to reduce the likelihood of spurious relationships between norms and sexual behaviors. Individual-level Wave I controls included race/ethnicity (respondents could choose multiple categories, so we calculated separate indicators for Hispanic, Asian, black, and Native American), age, agreement with the statement that "the sacred scriptures of your religion are the word of God and are completely without any mistakes," identification as a born-again Christian, maternal education (college degree versus other), nativity, household structure (lives with two biological parents versus other), household income-to-needs ratio (less than 200% of the federal poverty line, 200% or greater, or no information available), and current romantic relationship status. The number of peers who nominated the respondent as a friend was also included. We included a school-level control for racial composition (25% black students or higher versus other). Mollborn (2010) found that individual-level norms regarding pregnancy in the Add Health data differed markedly for blacks and Hispanics compared to non-Hispanic whites, but the Hispanic-white differences were explained by socioeconomic disparities. In addition, the correlation between the black and Hispanic school composition measures was too high to include both measures in the same models.

3.3. Analysis plan

Descriptive analyses present numbers of respondents in each category, as well as the proportion in that category who reported embarrassment at the prospect of a pregnancy and bivariate significance tests. Logistic regression analyses assessed the association of school- and peer-level teen pregnancy norms with individual-level embarrassment, for the whole sample then split by gender. Further logistic regression models split by gender estimated the relationship between all three levels of norms and first teens' likelihood of sexual intercourse, then the likelihood of contraception among sexually experienced teens.[5] Additional models introduced interactions among the different levels of norms. All analyses adjusted for the complex design features in Add Health, including adjustments for the over/undersampling of certain groups as well as stratification by region and the clustering of observations within schools (the primary sampling unit), using the *svy* commands in STATA 12.0 (see Chantala & Tabor, 1999 for more detail).[6] The *margins* command was used to estimate predicted probabilities.

4. Results

4.1. Descriptive statistics

Table 1 presents basic descriptive statistics for all variables used in our analyses. Separate columns present the proportion of respondents in each category who report embarrassment at the prospect of a pregnancy, the proportion who had sex by Wave II, the proportion who contracepted at last sex at Wave II, and *p*-values for categorical differences. The lack of a significant gender difference in personal embarrassment is striking (68% of boys and 71% of girls are embarrassed at the prospect of a pregnancy). As with previous research, we show large differences across racial and ethnic groups in which three out of every four non-Hispanic white and Asian students would be embarrassed by a pregnancy, but only one in two non-Hispanic black respondents and 58% of Hispanic respondents would be embarrassed. There are also clear age gradations in perceived norms, with greater embarrassment at younger ages. Interestingly, we find no

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[5] Multicollinearity is not of concern in these models. For the full model of main effects including personal, school, and peer norms, variance inflation factors are all below 1.8 for both girls and boys.

[6] Despite the adjustments for complex survey design, it is important to consider additional modeling strategies to evaluate the extent to which we are overstating statistical significance due to artificially reduced standard errors. Supplementary analyses estimated: (a) a logistic regression model without any adjustments for design effects; (b) the logistic regression model adjusting for complex survey design reported in our tables; (c) a multilevel logistic models in which a random intercept was specified for school-level clustering, and (d) a multilevel logistic regression model adjusting for sampling weights. The implications of the results remained the same across model specifications. In all cases, (b) was the most conservative (i.e., had the largest standard errors) of the four modeling strategies. We concluded that our results are not overstated due to the dependence of observations within schools and that we have adequately adjusted for non-independence and survey design features with our approach.

significant association between our two measures of religiosity and personal sense of embarrassment. Embarrassment does not line up neatly with sexual behaviors for many groups of respondents. For example, more popular respondents are more likely to be embarrassed, but also more likely to have had sex.

The first two rows of this table address one of the main questions of our paper: Apart from individual-level characteristics, what are the social inputs to perceived norms regarding pregnancy? These values illustrate why this social perspective is important because there is such a large range across social contexts with respect to pregnancy norms. For instance, the bottom third of students attend schools in which only one half of the students are embarrassed about pregnancy, and the top third attend schools in which four fifths of the students would be embarrassed. A comparable range of embarrassment is seen across the respondent's peer networks. As such, teenagers in the United States are socialized very differently about pregnancy. Furthermore, the normative climate of the school they attend might be quite different from the normative climate of their peers. Fig. 1 illustrates this important point graphically by plotting the levels of embarrassment that teens experience in their school and peer networks. There is an obvious association between the two ($r = 0.53$), but there remains a great deal of variability with respect to peer embarrassment within each school type. For instance, respondents with no friends who would be embarrassed attend schools that range from 0 to 90% embarrassed, and similar variation can be observed among individuals with unanimous embarrassment in their peer networks. Likewise, looking vertically, one can see the tremendous peer-group variation within each school stratum. This backdrop allows us to examine how these two social contexts are differentially related to boys' and girls' norms about pregnancy, their likelihood of having sex, and their likelihood of contracepting.

4.2. School and peer norms predicting individually perceived norms

Table 2 presents coefficients from logistic regression models in which we predict the likelihood of individual-level embarrassment on the basis of school and peer network norm averages and control variables. These models are comparable to the bivariate analyses presented in Table 1 but are adjusted for the covariance between each of the predictors and personal embarrassment. Although contextual measures of embarrassment predict personal embarrassment for both genders, the source of embarrassment is different for boys and girls. Females' perceived norm regarding pregnancy is associated with peer norms but not school norms, while the reverse is true for boys. This may be because of gender differences in peer relationships, with relational aggression a particularly relevant form of social control among female peers (Crick & Grotpeter, 1995). If boys have less direct relational social control from friends, the school normative context may instead be the relevant correlate to their individual perceptions of norms. To visually represent the magnitude of the effects for the regression models, we graphed fitted probabilities for each outcome as a function of a one standard deviation increase and decrease in each domain. Key probabilities from Tables 2–4 are presented in Fig. 2. For example, in the upper left we see that the probability of boys being embarrassed at the prospect of a pregnancy is around 0.68. A one standard deviation increase in school-level embarrassment is associated with an increase in boys' probability of personal embarrassment to 0.76.

4.3. School, peer, and individually perceived norms predicting sexual behaviors

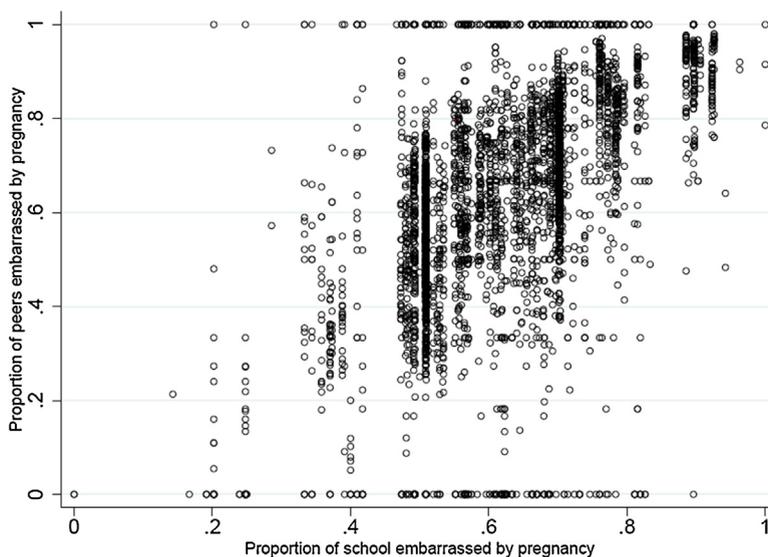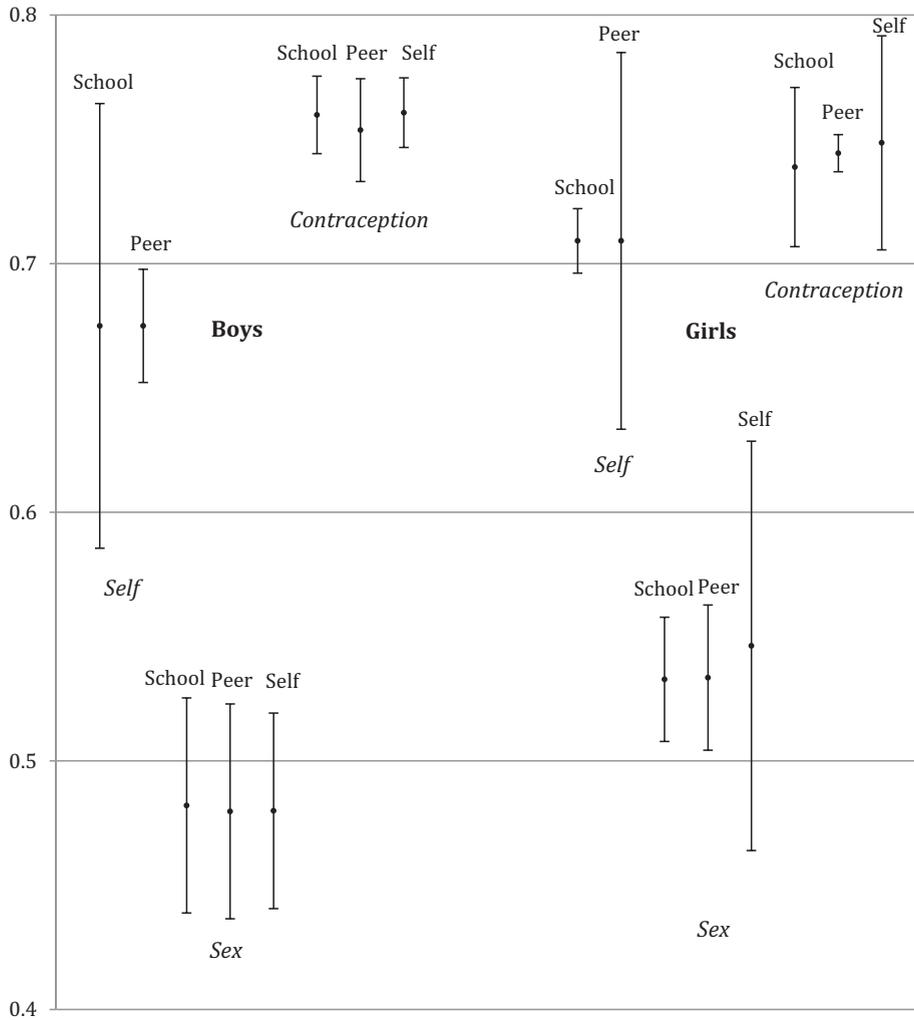Social norms are expected to be related to behavior, but school- and peer network-level norms can either be

Fig. 1. Scatter plot of school and peer embarrassment levels, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996. *Notes*: N = 3879.

Fig. 2. The relative influence of school, peer, and self-embarrassment related to sexual behaviors among males and females, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996. *Notes*: $N = 3879$ for self embarrassment and sexual intercourse; $N = 1864$ for contraception. Analyses are based on Table 2 and Model 1 in Tables 3 and 4 and adjust for complex survey design (clustering, stratification, and probability weights). Shows fitted probabilities for each outcome (dots) as a function of a one standard deviation increase and decrease in each domain (bars). For example, the dot for the line in the upper left says that the probability of boys being embarrassed at the prospect of pregnancy is around 0.68. A one standard deviation increase in school-level embarrassment increases boys' probability of being embarrassed to around 0.76, and a one standard deviation decrease in school embarrassment reduces their probability of being embarrassed to about 0.58.

associated with behavior through their influence on perceived norms, or their relationship may persist after individual perceptions are controlled. We work to disentangle these pathways here. Logistic regression models in Table 3 describe the associations between the three levels of norms (self, peer, and school) and the likelihood of sexual intercourse among teenagers. We estimate a baseline model that includes all three norm levels, and we then interact both peer and school norms with perceived norms. Two important observations emerge from this table. First, the relationships between norms and behavior differ by gender. School norms are not associated with the likelihood of sexual intercourse for girls, but greater levels of embarrassment in the school significantly reduce the likelihood that boys will have had sex

($b = -1.58$). There is a significant negative relationship between peer norms against pregnancy and the likelihood of sex for both genders, though the magnitude of the coefficient is larger for boys ($b = -0.92$ for boys and -0.65 for girls). Second, the magnitude of the association between perceived norms and sexual experience is nearly twice the size for girls compared to boys ($b = -0.91$ for girls and -0.43 for boys).[7] Therefore, not only is the source of perceived norms different for boys and girls (see Table 2),

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[7] The confidence interval for one gender does not overlap with the estimate for the other, suggesting a significant gender difference, although comparisons across logistic regression models should be made cautiously.

Table 2

Likelihood of personal embarrassment at the prospect of a pregnancy as a function of school and peer pregnancy norms among male and female adolescents, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996.

	Females	Males
Mean embarrassment		
School	0.50	3.02**
	(0.85)	(0.84)
Peer network	1.67***	0.53
	(0.41)	(0.38)
Race/ethnicity (NH White)		
Asian	−0.47	0.25
	(0.48)	(0.31)
Hispanic	−0.41*	−0.32
	(0.20)	(0.23)
NH Black	−0.57*	−0.76**
	(0.28)	(0.25)
Native American	−0.41	0.01
	(0.29)	(0.37)
Age in years	−0.26***	−0.20**
	(0.06)	(0.06)
Scriptural inerrancy	0.35*	−0.01
	(0.16)	(0.20)
Born-again Christian	0.13	0.15
	(0.18)	(0.20)
Mother college+	0.18	0.32*
	(0.15)	(0.13)
Born in United States	−0.90*	−0.48+
	(0.40)	(0.26)
Lives with both parents	0.04	0.20
	(0.16)	(0.22)
Income to needs (>200%)		
<200%	−0.66***	−0.38*
	(0.18)	(0.17)
Missing	−0.13	−0.32
	(0.25)	(0.23)
In a romantic relationship	−0.09	−0.39*
	(0.13)	(0.15)
Number of friend nominations	0.06*	0.03
	(0.02)	(0.02)
>25% Black at school	0.23	−0.12
	(0.22)	(0.19)
Intercept	4.13***	2.06+
	(1.18)	(1.19)

Notes: N = 2076 girls and 1803 boys. Analyses adjust for complex survey design (clustering, stratification, and probability weights). Cell entries represent logistic regression coefficients with standard errors in parentheses. Reference categories are in parentheses.

* $p < .05$, two-tailed significance test.
** $p < .01$, two-tailed significance test.
*** $p < .001$, two-tailed significance test.
+ $p < .10$, two-tailed significance test.

but the relationship between perceived norms and the likelihood of sexual intercourse is different as well. This is evident in the bottom portion of Fig. 2, in which all three levels of norms are roughly equivalent in terms of their associations with sexual activity among boys, but there is a striking difference in the magnitude of the associations among girls. More proximate measures of norms are more important for girls' behavior, while more distal measures have stronger associations for boys. Supplemental analyses found that perceived norms partially mediate the association between peers and sexual intercourse for girls and between school and sexual intercourse for boys.

The last two columns in Table 3 for the gender-specific models introduce interactions between the perceived norm and the school and peer network norms. As discussed

above, the normative environments are not always in line with one another, and they are at times quite contradictory (Bearman & Brückner, 2001; Sennott & Mollborn, 2011). As such, the match between an individual's norms and the norms of her or his environment may give important clues about how and when social context may influence behavior. For girls, we do not find evidence that individual norms differentially predict behavior as a function of school or peer network norms. For boys, the association between peer norms and sexual intercourse is contingent on perceived norms ($b = −1.24$, $p < .05$).[8] To better understand this association, we plotted the predicted probability of sexual intercourse as a function of peer norms and personal norms (see Fig. 3). As this figure shows, understanding boys' sexual activity requires information about both their perceived norms and the norms of their peers. Specifically, peer norms do not predict the likelihood of sexual intercourse among those who are not personally embarrassed at the prospect of a pregnancy, but for those who are personally embarrassed, the likelihood of having sex decreases significantly as the norm against teen pregnancy strengthens in their peer network.

A similar gender dynamic emerges when we consider the likelihood of having used contraception at last intercourse (among the subsample of teens who have ever had sex). These results are shown in Table 4. Perceived embarrassment predicts an increased likelihood of contracepting for girls, but school and peer network norms do not have direct associations with contraceptive behavior. We find no evidence among girls that the relationship between perceived norms and the likelihood of contracepting is contingent on the norms of their peers or schoolmates. While all three levels of norms predict the likelihood of having sex for boys, none of these factors is significantly associated with their likelihood of using contraception. But again, when the two aggregate norm measures are interacted with perceived embarrassment, a strong and complicated relationship emerges.[9]

Fig. 4 graphically displays the interaction between school norms and personal norms as related to contraceptive behaviors for boys (the interaction between peer and perceived norms follows a fairly similar pattern but with a smaller magnitude). As with sexual intercourse, the school-level norm is only predictive of an increased likelihood of contracepting for boys who themselves would be embarrassed by getting someone pregnant. In the figure, the highest probability of contracepting is among boys who are embarrassed by the thought of getting someone pregnant and who attend schools in which the norms against pregnancy are the strongest. Interestingly, Table 4 also shows that when boys are not personally embarrassed, higher levels of peer network embarrassment predict a lower likelihood of contracepting. In our findings, then, depending on their level and their interaction with other levels, norms against teen

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[8] Supplemental model fit tests found that introducing this interaction significantly improved the fit of the boys' model ($p < .05$).
[9] Supplemental model fit tests found that introducing each of these interactions significantly improved the fit of the boys' model ($p < .05$).

Table 3

Likelihood of Wave II sexual intercourse among adolescents: the role of personal, peer, and school level norms, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996.

	Females			Males		
Embarrassment at pregnancy						
School mean	−0.96	0.19	−0.98	−1.58[*]	−0.20	−1.59[*]
	(0.72)	(1.36)	(0.70)	(0.76)	(1.09)	(0.74)
Peer network mean	−0.65[*]	−0.67[*]	−0.36	−0.92[**]	−0.93[**]	−0.11
	(0.31)	(0.31)	(0.51)	(0.29)	(0.29)	(0.50)
Self	−0.91[***]	0.16	−0.65	−0.43[*]	0.96	0.36
	(0.20)	(0.84)	(0.40)	(0.20)	(1.10)	(0.48)
Self*school		−1.72			−2.20	
		(1.43)			(1.62)	
Self*peer			−0.43			−1.24[*]
			(0.63)			(0.61)
Race/ethnicity						
Asian	−0.53	−0.61	−0.55	−0.80[+]	−0.82[+]	−0.79[+]
	(0.59)	(0.56)	(0.58)	(0.43)	(0.43)	(0.43)
Hispanic	−0.69[*]	−0.68[*]	−0.70[*]	−0.11	−0.08	−0.08
	(0.30)	(0.30)	(0.30)	(0.24)	(0.23)	(0.23)
NH Black	−0.21	−0.18	−0.21	0.80[**]	0.82[**]	0.82[**]
	(0.30)	(0.30)	(0.30)	(0.27)	(0.28)	(0.27)
Native American	−0.06	−0.04	−0.08	0.20	0.20	0.19
	(0.29)	(0.29)	(0.29)	(0.38)	(0.38)	(0.38)
Age in years	0.28[**]	0.29[**]	0.29[**]	0.48[***]	0.49[***]	0.49[***]
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Scriptural inerrancy	−0.17	−0.18	−0.18	−0.06	−0.06	−0.04
	(0.17)	(0.17)	(0.17)	(0.19)	(0.19)	(0.19)
Born-again Christian	−0.51[**]	−0.50[**]	−0.51[**]	−0.38	−0.37	−0.39
	(0.18)	(0.18)	(0.18)	(0.28)	(0.29)	(0.29)
Mother college[+]	−0.55[***]	−0.55[***]	−0.56[***]	−0.18	−0.17	−0.18
	(0.14)	(0.14)	(0.14)	(0.20)	(0.20)	(0.20)
Born in United States	1.24[***]	1.23[***]	1.23[***]	0.60[+]	0.63[*]	0.63[+]
	(0.35)	(0.33)	(0.34)	(0.31)	(0.31)	(0.32)
Lives with both parents	−0.40[*]	−0.39[*]	−0.40[*]	−0.56[**]	−0.58[**]	−0.58[**]
	(0.19)	(0.19)	(0.19)	(0.16)	(0.16)	(0.16)
Income to needs (>200%)						
<200%	0.13	0.11	0.12	0.23	0.22	0.22
	(0.15)	(0.16)	(0.15)	(0.19)	(0.19)	(0.19)
Missing	−0.06	−0.06	−0.06	0.14	0.14	0.10
	(0.17)	(0.17)	(0.16)	(0.22)	(0.22)	(0.22)
In a romantic relationship	1.60[***]	1.60[***]	1.60[***]	1.03[***]	1.04[***]	1.05[***]
	(0.13)	(0.13)	(0.13)	(0.15)	(0.15)	(0.15)
Number of friend nominations	0.005	0.003	0.004	0.06[*]	0.06[**]	0.06[**]
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
>25% Black at school	0.13	0.11	0.14	−0.01	0.01	0.03
	(0.27)	(0.27)	(0.27)	(0.18)	(0.17)	(0.17)
Intercept	−3.70[**]	−4.38[**]	−3.84[**]	−6.41[***]	−7.37[***]	−6.99[***]
	(1.32)	(1.63)	(1.42)	(1.33)	(1.39)	(1.30)

Notes: N = 2076 girls and 1803 boys. Analyses adjust for complex survey design (clustering, stratification, and probability weights). Cell entries represent logistic regression coefficients with standard errors in parentheses. Reference categories are in parentheses.

[*] p < .05, two-tailed significance test.
[**] p < .01, two-tailed significance test.
[***] p < .001, two-tailed significance test.
[+] p < .10, two-tailed significance test.

pregnancy can result *both* in a lower likelihood of sexual experience and in a lack of contraceptive preparedness when sex does take place. This echoes Bearman and Brückner's (2001) findings for virginity pledgers.[10]

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[10] Table A1 reports models equivalent to Tables 2–4 for a subsample of teens who had not had sex at Wave I. Thus, these analyses predict perceived embarrassment about a teen pregnancy among virgins and sexual behaviors among teens whose first sex occurred in the year between Waves I and II. Because of this narrow time period, numbers were smaller and statistical power reduced, resulting in larger standard errors. Even so, there are many parallels between the key findings in this smaller sample and in the analytic sample reported in the other tables.

5. Discussion

Social norms have long been considered an important way in which social contexts are related to individuals' behaviors. Past research has usually inferred social norms from prevalent population-level behaviors or measured them at the individual level, even though they are conceptualized as a group-level phenomenon. Here, we focus on teen pregnancy norms to analyze the interplay among age norms at the school, peer network, and individual levels. We find that teen sexual behaviors are situated within highly varied and complex normative contexts. Predicting two sexual behaviors (penile-vaginal

Table 4

Likelihood of Wave II contraceptive use at last sex among adolescents: the role of personal, peer, and school level norms, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996.[10]

	Females			Males		
Embarrassed by pregnancy						
School mean	−1.24	−1.69[+]	−1.25	0.64	−1.86	0.62
	(0.77)	(0.95)	(0.78)	(1.29)	(1.48)	(1.17)
Peer network mean	0.17	0.18	0.25	−0.48	−0.55	−1.68[**]
	(0.38)	(0.38)	(0.54)	(0.50)	(0.49)	(0.58)
Self	0.49[*]	−0.17	0.58	0.17	−3.12[*]	−1.19[*]
	(0.19)	(0.81)	(0.49)	(0.29)	(1.33)	(0.59)
Self*school		1.06			5.39[*]	
		(1.23)			(2.18)	
Self*peer			−0.16			2.30[**]
			(0.68)			(0.85)
Race/ethnicity						
Asian	−1.29[*]	−1.23[*]	−1.30[*]	−0.66	−0.61	−0.61
	(0.59)	(0.59)	(0.59)	(0.48)	(0.47)	(0.48)
Hispanic	−0.77[*]	−0.78[*]	−0.77[*]	−0.04	0.05	−0.001
	(0.30)	(0.30)	(0.31)	(0.38)	(0.39)	(0.37)
NH Black	−0.11	−0.13	−0.11	−0.20	−0.27	−0.24
	(0.41)	(0.41)	(0.40)	(0.34)	(0.33)	(0.34)
Native American	−0.52	−0.54	−0.52	−1.22[*]	−1.21[*]	−1.30[*]
	(0.47)	(0.46)	(0.47)	(0.58)	(0.51)	(0.54)
Age	0.18	0.18	0.18	0.002	−0.03	−0.02
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.11)
Scriptural inerrancy	−0.29	−0.29	−0.30	−0.63[*]	−0.69[**]	−0.69[**]
	(0.23)	(0.23)	(0.22)	(0.24)	(0.24)	(0.25)
Born-again Christian	−0.36	−0.36	−0.36	0.90[**]	0.99[**]	0.97[**]
	(0.22)	(0.22)	(0.22)	(0.31)	(0.30)	(0.32)
Mother college[+]	0.06	0.05	0.06	0.34	0.34	0.35
	(0.22)	(0.22)	(0.22)	(0.26)	(0.27)	(0.26)
Born in United States	0.05	0.03	0.05	0.64	0.57	0.65
	(0.54)	(0.54)	(0.54)	(0.47)	(0.49)	(0.47)
Lives with both parents	0.20	0.19	0.20	0.36	0.41	0.41
	(0.27)	(0.27)	(0.27)	(0.25)	(0.26)	(0.25)
Income to needs (>200%)						
<200%	−0.18	−0.17	−0.18	−0.02	0.02	0.0002
	(0.20)	(0.21)	(0.20)	(0.25)	(0.26)	(0.24)
Missing	−0.37[+]	−0.37[+]	−0.38[+]	0.06	0.08	0.14
	(0.21)	(0.21)	(0.21)	(0.27)	(0.27)	(0.27)
In a romantic relationship	0.09	0.10	0.09	−0.34[+]	−0.37[+]	−0.34[+]
	(0.21)	(0.21)	(0.21)	(0.20)	(0.20)	(0.19)
Number of friend nominations	0.05[+]	0.05[+]	0.05[+]	−0.01	−0.02	−0.01
	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
>25% Black at School	−0.19	−0.17	−0.19	0.03	0.01	−0.03
	(0.28)	(0.28)	(0.28)	(0.41)	(0.39)	(0.39)
Intercept	−1.28	−0.98	−1.31	0.51	2.59	1.60
	(1.98)	(1.95)	(1.99)	(2.16)	(2.25)	(1.97)

Notes: N = 1000 sexually active girls and 864 boys. Analyses adjust for complex survey design (clustering, stratification, and probability weights). Cell entries represent *unstandardized* logistic regression coefficients with standard errors in parentheses. Reference categories are in parentheses.

[*] $p < .05$, two-tailed significance test.

[**] $p < .01$, two-tailed significance test.

[+] $p < .10$, two-tailed significance test.

intercourse and contraception at last sex), we find that school and peer norms have distinct and important associations with teenagers' behaviors that vary by gender and by the behavior being analyzed. School-level average norms against teen pregnancy are positively related to boys' individual embarrassment at the prospect of a teen pregnancy, while peer network norms are positively associated with girls' individual norms. The peer network measure is heavily weighted toward close friends, so close friends predict girls' perceptions of pregnancy norms, while schoolmates are related to boys' perceptions.

More proximate norms against pregnancy have stronger relationships with girls' sexual behaviors, although peer embarrassment predicts a lower likelihood of sexual intercourse above and beyond its relationship with individually perceived norms. We find that for sexual activity but not contraceptive use, individually perceived norms partially mediate the association between peer norms and sexual intercourse—in other words, it seems that girls internalize peer norms. Thus, peer norms have both direct and indirect associations with girls' behavior. The relative importance of individually perceived norms for girls' behavior compared to that of boys may also be a function of the higher stakes of pregnancy for girls. Boys' sexual behaviors are more reliant on their social contexts, but more importantly on the joint relationship of perceived
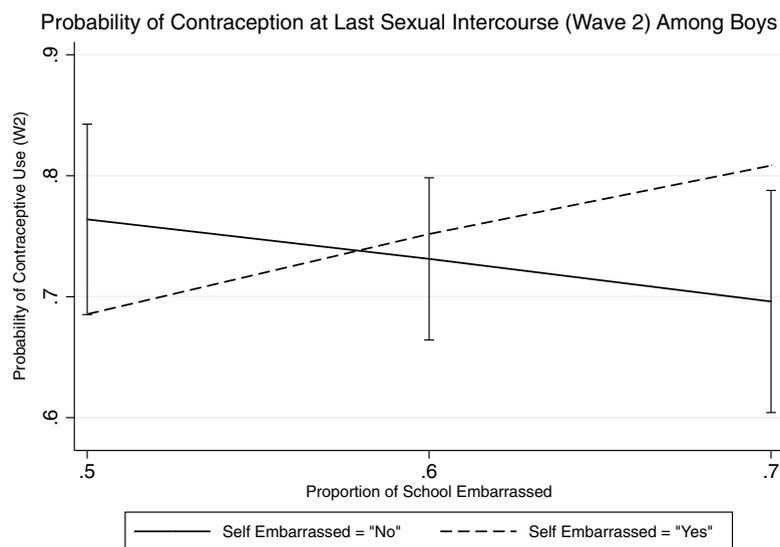
Probability of Sex at Wave 2 Among Boys
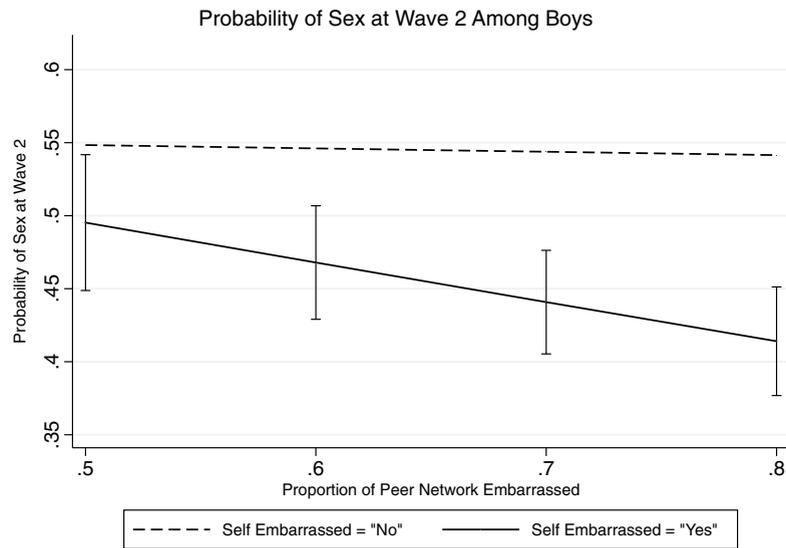
Fig. 3. The likelihood of sexual intercourse for boys as a function of individual and peer pregnancy norms, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996. *Notes*: *N* = 1803. Predicted probabilities based on Table 3, last column. Analyses adjust for complex survey design (clustering, stratification, and probability weights). *X*-Axis values use the interquartile range for peer network norms.

norms with school and/or peer norms. School, peer, and individually perceived norms against pregnancy independently predict boys' likelihood of sexual intercourse. This finding is theoretically interesting—group-level norms, then, are not simply related to behavior by shaping individual attitudes or perceptions of norms. Instead, they are independently associated with behavior without necessarily predicting individual perceptions. Future research can benefit from measuring norms in multiple reference groups because measuring them at the indivi-

dual level does not capture the full extent of the relationship between norms and behaviors.

Models introducing interactions among different levels of norms reveal complex associations with boys' behavior, showing that different levels of norms can interact with each other and can predict behavior in opposite directions. Boys' school or peer and individually perceived norms are associated with an *increased* likelihood of contraception when *both* discourage pregnancy. But perceived norms predict a *decreased* likelihood of contraception in the

Probability of Contraception at Last Sexual Intercourse (Wave 2) Among Boys

Fig. 4. Contraceptive use at last sex among males as a function of individual and school level pregnancy norms, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996. *Notes*: *N* = 864. Predicted probabilities based on Table 4, last column. Analyses adjust for complex survey design (clustering, stratification, and probability weights). *X*-Axis values use the interquartile range for school norms.

absence of a broader norm against pregnancy, and peer norms against pregnancy predict a *decreased* likelihood of contraception when the boy himself is not embarrassed. Importantly, our findings show that approximating social norms about teen sexual behaviors by assessing the prevalence of these behaviors is problematic. These findings again speak to the need to measure norms among multiple reference groups and not just at the individual level. Different reference groups work differently in predicting behaviors, and they work differently for girls and boys. They also suggest that the relationships between norms and multiple related behaviors they seek to regulate should be measured because their implications may vary. This dynamic warrants further study.

In sum, we have found that is not possible to fully understand teens' sexual behaviors without a comprehensive, multilevel, and population-based perspective on social norms that shape the risk of teen sexual activity and unprotected sex. Our study takes first steps toward building such a perspective and highlights several important normative dynamics for future research. While we argue that the methodological innovations are important, there are also limitations to our substantive findings. Importantly, the Add Health data come from the mid-1990s. Since then, rates of teen sex and pregnancy have declined while contraceptive use has increased. Despite this encouraging trend, teen sex and pregnancy are still highly visible and contentious social issues. Thus, norms about teen pregnancy and their relationships to teens' behaviors may or may not be different today than they were in the mid-1990s. Add Health's only available norm measure pertained to teen pregnancy, so we could not disentangle this norm from related norms about teen sex and contraception. We could not analyze family norms because of their high correlation with individual norms, and neighborhoods did not contain enough respondents to meaningfully aggregate norms to that level. Although we were able to measure pregnancy norms at one time point and sexual behaviors a year later, causality is not firmly established. Selection processes related to both norms and sexual behaviors creating a spurious relationship between the two cannot be ruled out. Importantly, we could not calculate peer network norms for students who did not have any in- or out-nominations of friends or (more prevalently) for students whose friends were not in the in-home sample or were too young. We believe that an examination of normative processes among true social isolates is a distinct, yet important, research question from the ones analyzed here.

We encourage future researchers to expand on our conceptualization of school-level norms by differentiating between schools that have similar levels of embarrassment but very different compositions of peer networks that lead to this overall norm. That is, one could imagine schools that have a top-down social pecking order in which a limited number of groups set the norm for the school, compared to a checkerboard pattern in which the overall prevalence of embarrassment is identical but the social mechanisms responsible for the pattern are quite different. This type of analysis goes beyond the stated goal of our initial inquiry, but it is clear from our results (even the basic plot in Fig. 1) that schools differ from one another in more ways than our mean embarrassment measure captures. Future research should consider this complexity. Our peer network measure includes friendship nominations of both genders, and future research could consider the implications of norms in gender-specific peer networks. Finally, the peer network data are available at only one time point, so we cannot rule out the possibility that the consequences of peer network norms may stem wholly or in part from the selection of similar teens into closer friendships. Research has found substantial selection processes in high school students' friendships (Schneider & Stevenson, 2000) that should be investigated if longitudinal social network data including norms measures become available. Selection is less of a concern for school-level norms because although prevalent sexual behaviors may figure into families' choice of high schools, they are likely less salient than they are for friend selection.

Multilevel investigations of social norms and their behavioral implications of the kind undertaken in this study may help us better understand norms and use them in analyzing human behavior. Past criticisms of studies involving norms have highlighted their lack of conceptualization of processes related to agency, conflict, and change, and policy efforts to change norms have met with limited success. Our findings argue for a more complex empirical understanding of norms. Here we have demonstrated that in the case of teen pregnancy norms, different levels of norms have distinct relationships with behaviors that differ for the behavior being analyzed and that can work in opposite directions. This empirical mapping shows that norms do conflict internally, and therefore, not surprisingly they predict behaviors in imperfect and inconsistent ways. However, individual-level agency (in the sense of a weak link between individually perceived norms and behaviors) seems to be consistently lower for girls regardless of the social context: Girls' sexual behaviors tend to conform to their perceived norm fairly strongly and independently of school and peer network contexts. Importantly, there is less clear alignment between boys' perceived embarrassment and their observed behaviors unless their embarrassment is matched by higher embarrassment levels in their school or peer network. The weaker link between perceived norms and behaviors among boys that we observe here suggests a greater range for personal agency for boys under some circumstances, but their perceived norms and behaviors match when their social contexts exert normative pressures that align with those perceived norms. In other words, boys' agency is more contingent on social context. Although future qualitative work needs to document the lived experience of individuals negotiating these complicated normative pressures, these findings suggest that the internal conflicts and inconsistencies in norms regulating teen sexual behaviors create a space for human agency. This is a critical avenue for future researchers to consider when examining sexual behaviors and health disparities by gender.

Appendix A

Table A1
Likelihood of Wave I embarrassment and Wave II sexual intercourse and contraceptive use among adolescents who *had not had sex by Wave 1*: The role of personal, peer, and school level norms, National Longitudinal Study of Adolescent Health (Add Health), 1995–1996.[10].

	Females			Males		
Predicting personal embarrassment (Table 2)						
Embarrassed by pregnancy						
School mean	0.87			3.71***		
	(0.95)			(0.98)		
Peer network mean	1.12*			0.70		
	(0.56)			(0.49)		
Predicting sexual intercourse (Table 3)						
Embarrassed by pregnancy						
School mean	−1.01	0.96	−1.00	−2.10+	−0.33	−2.09+
	(0.93)	(1.90)	(0.92)	(1.09)	(1.58)	(1.06)
Peer network mean	−1.00+	−1.02+	−1.16	−1.16*	−1.19*	−0.66
	(0.53)	(0.52)	(0.84)	(0.45)	(0.46)	(0.80)
Self	−0.48	1.12	−0.61	−0.34	1.23	0.12
	(0.29)	(1.17)	(0.63)	(0.29)	(1.33)	(0.67)
Self*school		−2.56			−2.51	
		(1.99)			(1.97)	
Self*peer			0.22			−0.72
			(1.00)			(0.89)
Predicting contraceptive use (Table 4)						
Embarrassed by Pregnancy						
School mean	3.14	5.73	3.13	6.13*	−2.08	6.36*
	(2.48)	(3.85)	(2.53)	(2.50)	(3.13)	(2.54)
Peer network mean	−0.30	−0.45	−0.01	−2.10+	−2.53*	−5.03*
	(0.83)	(0.86)	(1.25)	(1.19)	(1.26)	(1.95)
Self	1.14**	3.76	1.48	0.60	−8.42*	−2.49
	(0.42)	(2.48)	(1.00)	(0.53)	(2.73)	(1.57)
Self*school		−4.17			14.60*	
		(3.96)			(4.30)	
Self*peer			−0.59			4.82*
			(1.59)			(2.22)

Notes: N = 1265 girls and 1052 boys for personal embarrassment and sexual intercourse; 271 sexually active girls and 219 boys for contraceptive use. Analyses adjust for complex survey design (clustering, stratification, and probability weights). Cell entries represent *unstandardized* logistic regression coefficients with standard errors in parentheses. Reference categories are in parentheses.

* $p < .05$, two-tailed significance test.
** $p < .01$, two-tailed significance test.
*** $p < .001$, two-tailed significance test.
+ $p < .10$, two-tailed significance test.

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