

# Men and Masculinities

<http://jmm.sagepub.com/>

---

## **Associations of Family and Peer Experiences with Masculinity Attitude Trajectories at the Individual and Group Level in Adolescent and Young Adult Males**

Arik V. Marcell, Freya L. Sonenstein, Sorina Eftim and Joseph H. Pleck

*Men and Masculinities* published online 17 June 2011

DOI: 10.1177/1097184X11409363

The online version of this article can be found at:

<http://jmm.sagepub.com/content/early/2011/05/20/1097184X11409363>

---

Published by:



<http://www.sagepublications.com>

**Additional services and information for *Men and Masculinities* can be found at:**

**Email Alerts:** <http://jmm.sagepub.com/cgi/alerts>

**Subscriptions:** <http://jmm.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

---

# Associations of Family and Peer Experiences with Masculinity Attitude Trajectories at the Individual and Group Level in Adolescent and Young Adult Males

Arik V. Marcell,<sup>1</sup> Sorina E. Eftim,<sup>2</sup>  
Freya L. Sonenstein<sup>3</sup>, and Joseph H. Pleck<sup>4</sup>

## Abstract

Data were drawn from 845 males in the National Survey of Adolescent Males who were initially aged 15–17, and followed-up 2.5 and 4.5 years later, to their early twenties. Mixed-effects regression models (MRM) and semiparametric trajectory analyses (STA) modeled patterns of change in masculinity attitudes at the individual and group levels, guided by gender intensification theory and cognitive-developmental theory. Overall, men's masculinity attitudes became significantly less traditional between middle adolescence and early adulthood. In MRM analyses using time-varying covariates, maintaining paternal coresidence and continuing to have first sex in uncommitted heterosexual relationships were significantly associated with masculinity attitudes remaining relatively traditional. The STA modeling identified three distinct patterns of change in masculinity attitudes. A traditional-liberalizing

---

<sup>1</sup> School of Medicine, Johns Hopkins University, Baltimore, MD, USA

<sup>2</sup> ICF International, the Environmental and Toxicology Division, Fairfax, VA, USA

<sup>3</sup> Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, USA

<sup>4</sup> Human and Community Development, University of Illinois, Urbana, IL, USA

## Corresponding Author:

Arik V. Marcell, School of Medicine, Johns Hopkins University, Baltimore, MD 21287, USA  
Email: amarcell@jhsp.edu

trajectory of masculinity attitudes was most prevalent, followed by traditional-stable and nontraditional-stable trajectories. Implications for gender intensification and cognitive-developmental approaches to masculinity attitudes are discussed.

### **Keywords**

masculinity attitudes, gender development, growth modeling, trajectory

The importance of men's attitudes about masculinity for health and social behaviors has been demonstrated in both the United States (Levant and Richmond 2007; Mahalik et al. 2003; Pleck 1995; Pleck, Sonenstein, and Ku 1994) and in other countries (Levant and Richmond 2007; Mahalik, Lagan, and Morrison 2006; Pulerwitz and Barker 2008). The developmental course of attitudes about masculinity, however, has been little investigated. Analysis of the developmental trajectories of masculinity attitudes from adolescence to adulthood can contribute to the understanding of the interplay between "gender intensification" (Hill and Lynch 1983) and cognitive-developmental processes (Kohlberg and Ullian 1974) promoting more flexible gender-related attitudes during this period. In addition, it can help identify points for intervention to minimize the negative health and social outcomes associated with masculinity attitudes during adolescence and later in life. This study's goal is to analyze the trajectories of masculinity attitude development from middle adolescence through early adulthood among U.S. males, and the influences of experiences in family and peer contexts on these trajectories. The research employs data from a nationally representative sample of males, and utilizes recently developed statistical methods for the analysis of change at individual and group levels using longitudinal cohort data (Nagin 1999; Singer and Willett 2003).

### **Prior Research**

#### *Developmental Change in Masculinity Attitudes*

Research on gender-related attitudes has distinguished attitudes toward masculinity and attitudes about women as conceptually and empirically independent (Levant and Richmond 2007; Pleck, Sonenstein, and Ku 1994; Thompson and Pleck 1995). Attitudes about *masculinity* refer to beliefs about the importance of males adhering to traditional norms for male behavior, assessed with items concerning *men only*, for example, "It is essential for a guy to get respect from others" (Pleck, Sonenstein, and Ku 1994). By contrast, attitudes toward women are traditionally assessed as beliefs about the ideal or actual differences *between women and men*, for example, "Swearing is more repulsive in the speech of a woman than a man" (Spence and Helmreich 1972; see also more recent scales such as Glick and Fiske 1996). Although assessed by items comparing the sexes and sometimes described as attitudes about gender, these attitudes are usually conceptualized as attitudes

specifically about women. The distinction between the two kinds of attitudes is critical for the present study, which focuses on the former: attitudes toward masculinity.

Little past research has examined the development of masculinity attitudes as males mature from adolescence to adulthood. Indeed, Smiler (2004) identified “the lack of developmental accounts of masculinity” as an important limitation in the research of the past three decades. McHale et al. (2009, 492) also note that “much more could be learned about gender and personality by following youth into adulthood.” Attitudes about masculinity are less traditional among young adult men in their twenties and older compared to male adolescents (Levant et al. 1992; Neff, Prihoda, and Hoppe 1991; see also review in Levant and Richmond 2007). However, this does not necessarily show that attitudes become less traditional among the *same* men as they become older. Only one prior study was located analyzing change in masculinity attitudes in a sample of men followed over time (Courtenay 1998), focusing on predictors of difference scores. Since difference scores are highly correlated with initial level, this analysis could not distinguish between predictors of change and predictors of initial level.

Investigations of change in masculinity attitudes over development have been primarily descriptive. However, research on the developmental course of *attitudes about women* has been more theoretically driven, guided by “gender intensification” theory (Hill and Lynch 1983) and by cognitive-developmental theory (Kohlberg and Ullian 1974). Gender intensification refers to the increased socialization pressure toward traditional gender behavior following puberty, suggesting that gender attitudes correspondingly become more traditional. By contrast, according to cognitive-developmental theory, increasing cognitive complexity during development is reflected in more flexible views of gender. Depending on the relative strength of the two processes at different points in development, attitudes toward women may exhibit curvilinear trajectories. As Galambos, Almeida, and Petersen (1990, 1905) observe, “it is difficult to predict at what point in the pubertal process social pressures [for gender intensification] . . . will reach their maximum.” For example, gender intensification may be stronger in early adolescence, while its effects are overcome during later adolescence by augmented cognitive development, resulting in attitude traditionality increasing and then decreasing. Alternatively, early adolescent cognitive growth may reduce the traditionality of beliefs about women compared to late childhood, but heightened gender intensification in later adolescence may subsequently cause beliefs to become more traditional again.

Superseding earlier cross-sectional research (Katz and Ksanskak 1994), two studies have examined trajectories of attitudes toward women using longitudinal data. Liben and Bigler (2002) found that these attitudes became less traditional between ages 11–13. Crouter et al. (2007) investigated change in attitudes about women in the broader age range between 7 and 19 (seven observations). Using multilevel growth modeling, analyses revealed an overall negative linear effect of age (decreasing traditionality) combined with a positive quadratic effect, resulting

in a *U-shaped* curvilinear trajectory rotated somewhat clockwise. Attitudes toward women became less traditional from age 7 to 13, were roughly stable from age 13 to 15, and subsequently became more traditional from age 15 to 19. Boys' attitudes were more traditional than girls' (i.e., boys' trajectory showed a higher intercept) but sex did not influence linear or quadratic slope.

For the present study of trajectories of masculinity attitudes from middle adolescence through early adulthood, the preponderance of evidence suggest that cognitive-developmental processes promoting increasing flexibility outweigh gender intensification. Although Crouter et al.'s (2007) results showing increasing traditionalization of attitudes about women between ages 15 and 19 imply the opposite, attitudes about women and attitudes about masculinity are conceptually and empirically independent (Pleck, Sonenstein, and Ku 1994). Further, the endpoint of Crouter et al.'s observations (age 19) does not extend into early adulthood. Cross-sectional research focusing specifically on masculinity attitudes consistently finds that the attitudes of men in their twenties and older are less traditional than those of adolescent males (Levant et al. 1992; Neff, Prihoda, and Hoppe 1991; see also review in Levant and Richmond 2007). Thus, we hypothesize that from middle adolescence through young adulthood, that the cognitive-developmental process outweighs the gender intensification dynamic, so that males' attitudes about masculinity become less traditional.

### *Developmental Factors Influencing Change in Masculinity Attitudes*

Prior research suggests that family and peer experiences may be associated with the nature and degree of change in attitudes toward masculinity. These results are consistent with the ecological perspective on development, which emphasizes both family and individual developmental factors (Bronfenbrenner 1979). However, neither this research nor existing theory currently provide a sufficient basis for directional hypotheses about the effects of specific family and peer relations variables. Two studies reported associations between family and peer variables with masculinity attitudes, though the associations observed were cross-sectional and thus did not concern change in attitudes. Residence with one's father in the early years is associated with traditional masculinity beliefs (Courtenay 1998). Traditional attitudes toward masculinity are also connected to behaviors and attitudes suggesting lower quality of heterosexual relationships, such as higher number of partners in last year, lower level of intimacy when first having sex with a partner, and believing that relationships between men and women are adversarial (Pleck and O'Donnell 2001; Pleck, Sonenstein, and Ku 1993a, 1993b, 1994). No previous studies examine how family and peer experience affect change in masculinity attitudes over time.

However, research exists concerning the effect of family and peer experiences on patterns of change in two related phenomena: attitudes about women, and gendered personal-social qualities and activity interests. Crouter et al.'s (2007) study also examined how trajectories of attitudes toward women varied by birth order, gender

of siblings, and parents' gender attitudes. A key finding was that among firstborn boys with brothers and traditional parents, these attitudes become more traditional over development in a linear fashion, varying from the curvilinear pattern in the full sample. A plausible interpretation is that these family factors heighten the gender intensification process. Thus, sample subgroups with differing family experience exhibited variant attitude trajectories. In another report using the same dataset, greater time spent with same-sex peers, treated as a time-varying covariate, is associated with increases in "gendered personal social qualities (expressivity and instrumentality)" and in gendered activity interests (McHale et al. 2009). Martin and Fabes' (2001) research also documented that preschool boys who increase the proportion of their play with same-sex peers over a six-month period show increased preference for stereotypically male toys. These findings suggest that greater time with same-sex is gender intensifying, and are consistent with Maccoby's (1998) influential thesis that peers' experience in gender-segregated groups is the driving dynamic underlying gender development.

In summary, the influence of family and peer experiences on developmental change in attitudes specifically toward masculinity has not heretofore been investigated using longitudinal designs and advanced analytical techniques. Research documenting how family and peer experiences influence change focus on change in gender-related outcomes that are conceptually distinct from masculinity attitudes. In light of these limitations in current literature, we predict only that trajectories of change in attitudes toward masculinity are associated with family and peer experience, without making directional predictions concerning specific family and peer variables. The results obtained here will contribute to development of theory concerning the role of family and peer experiences in increasing or reducing gender intensification, making possible the formulation of more specific, directional hypotheses in future research.

## The Present Study

This study analyzes trajectories of developmental change in attitudes toward masculinity from middle adolescence through early adulthood, and family and peer influences on these trajectories. The study tests the following hypotheses based on the literature just reviewed:

*Hypothesis 1.* From middle adolescence to the mid-twenties, overall, masculinity attitudes become less traditional. Thus, if traditional masculinity attitudes are scored as high, trajectory slope will be negative.

*Hypothesis 2.* Trajectories of masculinity attitude development vary by family context.

*Hypothesis 3.* Trajectories of masculinity attitude development vary by peer context.

## Method

### *Data and Procedures*

The National Survey of Adolescent Males (NSAM) is a nationally representative household study of noninstitutionalized never-married U.S. males aged 15–19 at the baseline survey in 1988, with two follow-up interviews into their mid-twenties (Ku et al. 1999). The study used an area probability-sampling frame, with oversamples of Blacks and Hispanics; the sample is nationally representative when sampling weights are used. The response rate for the baseline survey in 1988 was 74 percent ( $N = 1,880$ ). For the first follow-up survey in 1990–1991 the majority of participants' ages ranged from 17 to 22 (the majority were interviewed in 1991) (follow-up rate = 89 percent;  $N = 1,677$ ). The second follow-up survey was conducted in 1995 and participants' ages ranged from 21 to 26 (original cohort follow-up rate = 75 percent, taking deaths into account;  $N = 1,377$ ). Only 2 percent of the sample reported any homosexual contact, and only 1 percent reported being bisexual or gay in their orientation in the 1988 survey (Ku, Sonenstein, and Pleck 1992).

### *Analytic Sample*

The analytic sample for this study consisted of participants who completed all three surveys ( $n = 1,290$ ), who were 15–17-years-old at baseline ( $n = 845$ ), and had valid data for the key outcome variable, masculinity attitudes ( $n = 841$ ). Mean age (standard deviation) at baseline was 16.0 (.8). At first follow-up, averaging 2.5 years after the initial interview, the analytic sample was predominantly age 18–20 (18.5 [1.0]). At second follow-up, averaging 6.8 years after the initial survey, most sample members were age 22–24 (22.9 [.9]). We selected a subsample with an age range narrower than that of the full sample to reduce the variation in age at each observation. The younger rather than older subgroup of the sample was employed to use a starting point for the trajectory analysis earlier in development, beginning in middle rather than late adolescence, overlapping to a greater degree with the developmental period investigated in prior studies of attitudes toward women such as Crouter et al. (2007).

### *Measures*

*Masculinity attitudes.* Attitudes toward masculinity were assessed at each wave with the six-item version of the eight-item Male Role Attitudes Scale (MRAS; Pleck, Sonenstein, and Ku 1993a) available for all three waves of the NSAM. Items were coded on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Scores at each wave were normally distributed. The coefficient  $\alpha$  at age 15–17 was .49; at age 18–20, .59; and at age 22–24, .58. Analyses indicated that item removal would not improve internal consistency. These relatively lower  $\alpha$ s were due to the restricted number of items that could be included in the NSAM from the

MRAS's longer source scale (Thompson and Pleck 1986). The MRAS has been found to predict a variety of aspects of sexual behavior and contraceptive use, substance use, violence toward female partners, educational difficulties, and delinquency in male adolescents (Pleck and O'Donnell 2001; Pleck, Sonenstein, and Ku 1993a, 1993b, 1994), suggesting that its internal reliability is adequate for the present analysis.

*Family context.* The measures available in the NSAM included family structure at age 14 coded as living in two-parent household (1) or single mother or other household (0). Birth order was treated as an ordered categorical variable and coded as being the oldest or only child (2), middle child (1), or youngest child (0). Sibling composition at age 15–17 was coded as number of brothers and number of sisters in the household. At age 15–17, respondents rated strictness of family rules at age 14 with the item “How would you describe the rules at home about things like staying out late, dating, alcohol, and so on?” using a 4-point response scale ranging from 1 (no rules) to 4 (very strict). Perception of parental influence was assessed at age 15–17 with the item “How often are you influenced by what your parents or the people who raised you think?” with a 4-point response scale ranging from 1 (not at all) to 4 (very often). Perception of parental response to a pregnancy was assessed at age 15–17 with the item “If you got a girl pregnant now, how would your friends react,” on a 5-point scale ranging from 1 (very upset) to 5 (very pleased). Parent communication about reproductive health assessed at age 15–17, measured by reports of discussion with parents about five reproductive health topics (menstruation, pregnancy, STIs, contraception, and HIV/AIDS), was summed into a composite score (zero to five topics). These measures are time-invariant covariates, assessed only at baseline.

As a measure of changes in family context, respondents were coded at each interview as living with their biological father in the last 12 months or not, based on the household roster collected in the survey. This measure, termed paternal coresidence, is treated as a dummy variable and is used as a time-varying covariate.

*Peer context.* The measures available in the NSAM include perception of degree of peer influence, assessed at age 15–17 with the item “How often are you influenced by what your friends think?” on a 4-point scale ranging from 1 (not at all) to 4 (very often). Perception of peer response to a pregnancy was assessed at the same age with the item “If you got a girl pregnant now, how would your parent/peer react,” on a 5-point scale ranging from 1 (very upset) to 5 (very pleased). These measures are time-invariant covariates, measured only at baseline.

As a measure of changes in peer context, respondents' committed heterosexual relationship status in the last 12 months was coded at age 15–17, 18–20, and 22–24, used as a time-varying covariate. Respondents described their relationship status at first sex with their most recent partner, if any, in the past 12 months. Categories were: not in a sexual relationship in the last year (0); in a relationship

in the last year and at the time of first sex, relationship was not committed (going out once in a while, just friends, just met) (1); or in a relationship in the last year and at time of first sex, relationship was committed (engaged, going steady) (2).

*Sociodemographic background characteristics.* Participants reported their race/ethnicity, coded as non-Hispanic Black, non-Hispanic White, Hispanic, and other race. In multivariate analyses, this variable was dummy-coded, with non-Hispanic White as the reference category. Age was treated categorically (15, 16, and 17). Mother's education level was treated as an ordered categorical variable (no formal schooling [0]; elementary school [1–8]; high school [9–12]; college/graduate-professional school [13+]), using a dummy variable to account for respondents who did not know their mother's education level ( $n = 195$ ; Cohen and Cohen 1983). Respondents' completed education was coded on the same scale. Reports at age 22–24 were used since many participants were still completing their education at prior surveys. Region of residence was coded categorically as Northeast, South, Midwest, or West. Urban residence was coded as living in an urban or nonurban setting.

### Analysis Plan

Frequencies and analyses reported here are weighted (Ku et al. 1999). Two analytic approaches were used to examine trajectories of masculinity attitudes over development and the family and peer experiences associated with them. First, at the individual level, unconditional and conditional growth models for masculinity attitudes were investigated using mixed-effects regression models (MRM; Laird and Ware 1982) with the *gllamm* procedure in STATA, assuming an unstructured correlation matrix. The MRMs are well suited for analyzing individual changes over development, particularly analyses involving correlated multiple observations such as those collected in NSAM. As applied here, in addition to accounting for fixed effects, the random-effects component of MRM analyzes each individual's initial masculinity score at baseline (random intercept) and change over time (random slope), and examines the association of masculinity attitudes over development with time-invariant and time-varying family and peer experiences. Employing a stepwise deletion approach, the Bayesian Information Criterion (BIC; Schwarz 1978), was used to determine the best fitting and most parsimonious model. Continuous variables were centered for the purposes of interpretation in our analyses.

Second, we also estimated developmental trajectories of masculinity attitudes at the group level using a semiparametric trajectory analysis (STA) method in SAS (PROC TRAJ; Nagin 1999; Nagin and Tremblay 2001), a person-centered rather than variable-centered analytic method (Bauer and Shanahan 2007). This method identifies distinct subgroups in a study population, estimates the proportion of the study population that follows each trajectory, and assigns individuals to trajectory groups based on person-centered covariate information using the same set of covariates identified in the best-fitting model. We replicated analyses without respondents

who did not know their mother's education level (smaller sample) and found almost identical results. We present findings for the larger sample to maintain the sample's representativeness and thus the generalizability of results to the population.

## Results

### *Descriptive Analyses*

Table 1 presents descriptive analyses for variables collected only at age 15–17 (excepting completed education, assessed at 22–24), while Table 2 provides results for the variables assessed at all three age periods. Discussion below focuses on masculinity attitudes. At age 15–17, participants' mean (standard deviation) masculinity attitude scores (2.53 [.50]) were close to the scale midpoint (2.5 for a 1–4 scale), and thus can be characterized as neutral. Their attitudes toward masculinity became slightly less traditional at age 18–20 (2.42 [.49]), and again slightly less so by age 22–24 (2.34 [.48]; Table 2). Since these observations are not independent, the significance of this change is best evaluated in the later mixed-effects regression model.

### *Overall Trajectory of Masculinity Attitude Development (Hypothesis 1)*

According to Hypothesis 1 the overall trajectory is negative (decreasing traditionality). In the mixed-effects regression model (MRM), the unconditional growth model (Table 3, upper panel), the significant negative coefficient for time indicates that masculinity attitudes declined significantly over development, supporting Hypothesis 1 ( $\beta = -.03, p < .001$ ).

### *Preliminary Analyses for Hypotheses 2 and 3*

The study predicted that while there is an overall trajectory of masculinity attitude development, varying patterns of change are associated with family and peer experiences. These analyses use two approaches to explore the nature and extent of variation in attitude trajectories.

*Mixed-effects regression model.* The random slopes for both the unconditional and conditional models were significant, reflecting varying trajectory slopes over time at the individual level (Table 3). The significance of random slopes is tested by dividing the within person variance estimate by its standard error, treated as a  $t$ .

*Trajectory analysis.* Semiparametric trajectory analysis (STA) identified three trajectories at the group level. The optimal number of groups was determined using the maximum BIC (Nagin 1999). Each group trajectory was modeled in terms of its constant, linear, and quadratic slope. The best-fitting trajectory for each group was selected based on the statistical significance of the slope estimates. The model with three censored normal groups had the best fit (BIC = -1515.93) and was also the

**Table 1.** Participant Characteristics: Background, Family Context, and Peer Context

	N <sup>a</sup>	Mean (SD) or % <sup>b</sup>
<b>Background Characteristics</b>		
Age at baseline		
15	282	32.7
16	275	31.9
17	288	35.4
Race/ethnicity		
Non-Hispanic white	355	72.6
Non-Hispanic black	290	14.8
Hispanic	175	9.3
Other	25	3.2
Mother's education		
High school diploma/GED or less	522	55.4
College or more	240	38.1
Respondent's education		
High school diploma or less	428	37.8
College or more	412	61.7
Region		
South	392	35.9
Northeast	138	19.6
Midwest	169	23.6
West	146	20.8
Urban residence	845	66.4
<b>Family Context</b>		
Family structure at age 14		
Single parent/other household	219	19.0
Two parent household	625	81.0
Birth order		
Youngest	272	32.2
Middle	251	29.3
Oldest or only	271	32.9
Number of brothers	845	1.25 (1.15)
Number of sisters	845	1.16 (1.16)
Strictness of family rules at age 14	845	3.24 (0.60)
Parental influence at baseline <sup>c</sup>	845	3.29 (0.71)
Parental response to a pregnancy at baseline <sup>d</sup>	843	1.26 (0.60)
Number reproductive health topics parents discuss at baseline <sup>e</sup>	844	2.36 (1.81)
<b>Peer Context</b>		
Peer influence at baseline <sup>c</sup>	845	2.63 (0.77)
Peer response to a pregnancy at baseline <sup>d</sup>	838	2.29 (1.09)

<sup>a</sup> Unweighted; <sup>b</sup> Weighted

<sup>c</sup> 1 (not at all influenced) to 4 (very often influenced)

<sup>d</sup> 1 (very upset) to 5 (very pleased)

<sup>e</sup> Number of topics covered ranged from 0 to 5

**Table 2.** Participant Characteristics: Masculinity Attitudes, Family Context, and Peer Context at Baseline, First Follow-Up and Second Follow-Up

	Age 15-17 <sup>a</sup>		Age 18-20 <sup>b</sup>		Age 22-24 <sup>c</sup>	
	N <sup>d</sup>	Mean (SD) or % <sup>e</sup>	N <sup>d</sup>	Mean (SD) or % <sup>e</sup>	N <sup>d</sup>	Mean (SD) or % <sup>e</sup>
<b>Masculinity Attitudes</b>						
Scale score <sup>f</sup>	845	2.53 (0.50)	845	2.42 (0.49)	841	2.34 (0.48)
Scale items <sup>f</sup>						
It is essential for a guy to get respect from others	845	3.34 (0.80)	845	3.06 (0.88)	841	3.08 (0.84)
A guy will lose respect if he talks about his problems	844	1.84 (0.88)	845	1.65 (0.76)	841	1.56 (0.70)
A young man should be physically tough, even if he's not big	845	2.70 (1.03)	844	2.65 (0.95)	838	2.37 (1.02)
It bothers me when a guy acts like a girl	844	3.38 (0.90)	844	3.27 (0.89)	840	3.10 (0.99)
I don't think a husband should have to do housework	845	1.84 (0.88)	845	1.62 (0.77)	839	1.42 (0.66)
Men are always ready for sex	844	2.11 (0.96)	843	2.29 (0.94)	840	2.48 (1.00)
<b>Family Context</b>						
Paternal coresidence in past 12 months	491	68.0	415	52.2	212	21.8
<b>Peer Context</b>						
Committed heterosexual relationship status at first sex, last 12 months						
Not sexually active or in a sexual relationship	484	63.2	353	47.3	129	17.9
Not in committed relationship at first sex	143	12.7	235	25.5	248	30.3
In committed relationship at first sex	198	22.6	247	26.7	425	48.0

Assessment<sup>a</sup> 1988,<sup>b</sup> 1990/91,<sup>c</sup> 1995

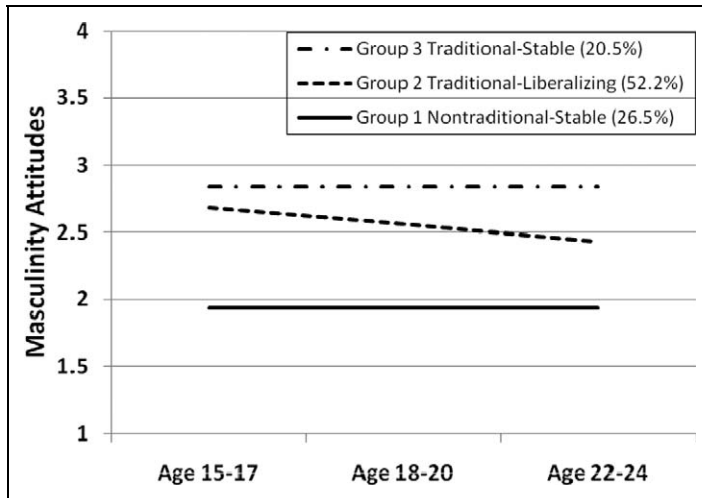
<sup>d</sup> Unweighted; <sup>e</sup> Weighted

<sup>f</sup> 1 (strongly disagree) to 4 (strongly agree)

**Table 3.** Unconditional and Conditional Mixed-Effect Regression Models Examining Influences on Masculinity Attitudes Over Time

	Estimates	Standard Error	p-value
<b>Unconditional Model</b>			
Constant	2.528	(0.070)	<0.001
Time	-0.025	(0.004)	<0.001
<b>Variance components</b>			
Level-1: Within-in person	0.125	(0.009)	
Level-2: In initial status	0.130	(0.020)	
Level-2: In rate of change	0.001	(0.001)	
Goodness-of-fit: BIC	3005.84		
<b>Conditional Model<sup>a</sup></b>			
Constant	2.436	(0.043)	<0.001
<b>Background Characteristics</b>			
<b>Race/ethnicity</b>			
Non-Hispanic white	Ref	-	-
Non-Hispanic black	0.130	(0.043)	0.002
Hispanic	0.046	(0.051)	0.360
Other	0.050	(0.128)	0.693
<b>Mother's education</b>			
High school diploma/GED or less	Ref	-	-
College or more	-0.019	(0.007)	0.010
<b>Respondent's education</b>			
High school diploma or less	Ref	-	-
College or more	-0.013	(0.005)	0.010
<b>Time Invariant Factors</b>			
<b>Family Context</b>			
<b>Family structure at age 14</b>			
Single parent/other household	Ref	-	-
Two parent household	-0.117	(0.043)	0.006
Number reproductive health topics parents discuss at baseline <sup>b</sup>	-0.027	(0.011)	0.014
<b>Peer Context</b>			
Peer response to a pregnancy at baseline <sup>c</sup>	0.058	(0.018)	0.001
<b>Time Varying Factors</b>			
<b>Family Context</b>			
Change in paternal coresidence in last 12 months	0.147	(0.029)	<0.001
<b>Peer Context</b>			
<b>Change in committed heterosexual relationship status at first sex, last 12 months</b>			
In a committed relationship	Ref	-	-
Not in a relationship	0.039	(0.028)	0.175
Not in a committed relationship	0.063	(0.031)	0.041
<b>Variance components</b>			
Level-1: Within-in person	0.121	(0.009)	
Level-2: In initial status	0.111	(0.019)	
Level-2: In rate of change	0.002	(0.001)	
Goodness-of-fit: BIC	2868.87		

<sup>a</sup> Controlling for dummy variable representing missing on mother's education (Cohen and Cohen 1983).<sup>b</sup> Number of topics covered ranged from 0 to 5; <sup>c</sup> 1 (very upset) to 5 (very pleased)



**Figure 1.** Mean masculinity attitude scores by age for trajectory groups<sup>a</sup>.

<sup>a</sup>95 percent confidence intervals (not shown) do not overlap, indicating trajectory groups are distinct from each other.

most interpretable, compared to a two group model (BIC = -1532.26) and a four group model that did not achieve convergence.

Figure 1 shows the expected mean masculinity belief score for each trajectory group at each age. The 95 percent confidence intervals (not shown in the figure) do not overlap, indicating that the trajectory groups are distinct from each other. Group 1 was modeled by a constant trajectory over time (i.e., zero order). Group 1 exhibits a *nontraditional-stable* trajectory of masculinity attitude development (average mean intercept score = 1.93,  $p < .001$ ) representing 26.5 percent of the population with an estimated mean probability of 83.2 percent (95 percent CI: 80.7–85.6 percent) for group membership. We characterize this trajectory as *nontraditional* because its initial mean score at age 15–17 (1.93) is almost .6 of a standard deviation lower than the sample mean of 2.53 (Table 2), and *stable* because the trajectory slope was nonsignificant. A difference (effect size) this large in standard deviation units ( $>.5$ ) is conventionally considered a “medium”-sized effect (Rosenthal, Rosnow, and Rubin 2000). In addition, 1.93 is substantially below the scale’s theoretical midpoint of 2.5, representing neither agreement nor disagreement with the scale items (coded 1–4) on average. Group 2 was modeled as a linear trajectory over time (i.e., one order). Group 2 shows a *traditional-liberalizing* masculinity attitude trajectory (average mean intercept score = 2.69,  $p < .001$  and slope =  $-.13$ ,  $p < .001$ ) representing 52.2 percent of the population with an estimated mean probability of 81.9 percent (95 percent CI: 80.6–83.2 percent) for group membership. We describe this trajectory as *traditional* because its initial mean score at age 15–17 is substantially higher (.76 SDs) than the Group 1 mean and as

*liberalizing* because its subsequent trajectory significantly declines (becomes less traditional) by age 22–24 (2.43). Group 3 was modeled by a constant trajectory over time (i.e., zero order). Group 3 shows a *traditional-stable* trajectory of masculinity attitudes (average mean intercept score = 2.84,  $p < .001$ ) representing 20.5 percent of the population with an estimated mean probability of 86.4 percent (95 percent CI: 84.6–88.3 percent) for group membership. We characterize this trajectory as *traditional* because its initial mean score at age 15–17 (2.84) is also substantially higher (.91 *SDs*) than the Group 1 mean, and *stable* because the trajectory slope was nonsignificant. Thus, about half the sample follows a traditional-liberalizing trajectory, consistent with the overall significant negative slope for masculinity attitudes in the mixed-effects regression analysis (Table 3). The remainder of the sample demonstrates relatively flat trajectories with relatively traditional or nontraditional attitudes.

### *Association of Trajectories of Masculinity Attitude Development with Family Contexts and Peer Contexts (Hypotheses 2 and 3)*

Hypotheses 2 and 3 stipulate that trajectories of masculinity attitudes are associated with family contexts and peer contexts. Prior to testing these hypotheses in the MRM (conditional model) and in the trajectory analysis, we first examined the bivariate associations of family context measures, peer context measures, and sociodemographic variables with masculinity attitudes over time. This initial step identifies the family and peer factors potentially linked to trajectories of masculinity attitude development at  $p < .05$  for use in the conditional MRM model and the trajectory analysis, and the sociodemographic variables to be controlled. The predictors included in the lower panel of Table 3, plus early parental influence, met this criterion. This set of covariates was assessed for multicollinearity and none was found.

*Mixed-effects regression model.* Table 3, lower panel, presents the most parsimonious random-effects conditional model. The conditional model provides results about the association of change in the time-varying covariates (live with biological father in last year, committed heterosexual relationship in the last year) with change in masculinity attitudes. Change in paternal coresidence in the last year was significantly associated with change in masculinity attitudes, controlling for all other factors ( $\beta = .15, p < .001$ ). That is, trajectories of change in the two variables are related. An illustration of the positive association is that the masculinity attitudes of a boy living with his biological father at age 15–17 who continued to live with him at age 18–20 (i.e., the value of the time-varying covariate remains 1) were more likely to remain traditional (higher value) than the attitudes of a boy living with his father at age 15–17 who did not continue to live with him (value of time-varying covariate drops from 1 to 0).

In addition, change in uncommitted heterosexual relationship status in the last 12 months was significantly linked to change in masculinity attitudes ( $\beta = .06$ ,

$p = .041$ ). For example, the masculinity attitudes of a boy not in a committed heterosexual relationship at time of first sex with his most recent partner at age 18–20 who also was in an uncommitted heterosexual relationship at first sex at age 22–24 (i.e., time-varying covariate remains 1) were more likely to remain traditional (higher value) than the attitudes of a boy who changed to another relationship status (covariate changes from 1 to 0).

The final, most parsimonious conditional model also yields information about the association of masculinity scores at 15–17-years-old with the time-invariant family and peer experiences assessed at baseline. These results indicate how these factors are associated with varying trajectories in the sense of influencing whether individuals' trajectories start at lower or higher levels. Among family factors, initial masculinity attitudes, and therefore overall trajectories, were less traditional among males who lived in a two-parent family at age 14 ( $\beta = -.12, p = .006$ ) and among males who had more discussion of reproductive health topics with their parents ( $\beta = -.03, p = .014$ ). Parental influence, not significant in exploratory models, was excluded from the final model. Among peer factors, masculinity attitudes at baseline were more traditional among males who expected positive peer reaction to their getting a girl pregnant ( $\beta = .06, p = .001$ ).

The conditional model also revealed that age 15–17 masculinity scores were significantly higher among Black than White non-Hispanic males ( $\beta = .13, p = .002$ ). In addition, baseline masculinity scores were significantly negatively associated with mother's and respondent's education ( $\beta = -.02$  and  $-.01, p = .010$  and  $.010$ ).

*Trajectory analysis.* Using STA, Table 4 compares the three trajectory groups on family context factors, peer context factors, and sociodemographic variables. Focusing first on the time-varying covariates, among nontraditional-stable and traditional-stable masculinity attitude groups, masculinity attitudes of boys continuing to live with their biological father were significantly more likely to become more traditional (Maximum Likelihood Estimate [MLE] = 0.158,  $p = .036$  and MLE = 0.142,  $p = .003$ , respectively) than the attitudes of boys continuing to not live with their father. Analyses within groups did not find committed relationship status related to change in attitudes.

Concerning the time-invariant predictors, the trajectory groups differed from each other on the number of reproductive health topics discussed with parents at 15–17, with men in the traditional-stable attitude trajectory discussing significantly fewer topics than men in the nontraditional-stable trajectory (Group 3: mean [SD] = 1.59 [1.69] vs. Group 1: 3.20 [1.78]; MLE = 0.40,  $p = .026$ ). The three trajectories did not differ significantly from each other on family structure at age 14 nor did they differ on peer influence.

## Discussion

This study investigated hypotheses about the developmental trajectory of masculinity attitudes from middle adolescence through early adulthood based on

**Table 4.** Comparisons (Maximum Likelihood Estimates) among Masculinity Attitude Trajectory Groups on Family Context, Peer Context, and Background Characteristics

	Trajectory Groups					
	Group 1		Group 2		Group 3	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
	Nontraditional-stable trajectory 26.5% (N = 197)		Average-liberalizing trajectory 52.2% (N = 432)		Traditional-stable trajectory 20.5% (N = 158)	
<b>Time Varying Factors</b>						
Intercept	1.93	0.000	2.69	0.000	2.84	0.000
Linear	–	–	–0.13	0.000	–	–
<b>Family Context</b>						
Paternal coresidence in last 12 months	0.16	0.036	0.04	0.421	0.14	0.003
<b>Peer Context</b>						
Committed heterosexual relationship status at first sex, last 12 months						
In a committed relationship	Ref	–	Ref	–	Ref	–
Not in a relationship	0.04	0.650	0.07	0.182	0.04	0.440
Not in a committed relationship	0.03	0.662	–0.05	0.324	0.03	0.386
	Group 1 vs 3		Group 2 vs 3		Group 1 vs 2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<b>Time Invariant Factors</b>						
<b>Family Context</b>						
Family structure at age 14						
Single parent/other household	Ref	–	Ref	–	Ref	–
Two parent household	1.11	0.147	–0.16	0.793	1.27	0.129
Reproductive health topics parents discuss at baseline	0.40	0.026	0.25	0.146	0.14	0.522
<b>Peer Context</b>						
Peer response to a pregnancy at baseline	–0.56	0.173	–0.22	0.307	–0.34	0.448
<b>Background Characteristics</b>						
Age at baseline	0.01	0.974	–0.75	0.035	0.76	0.016
Race/ethnicity						
Non-Hispanic white	Ref	–	Ref	–	Ref	–
Non-Hispanic black	–1.20	0.039	–1.19	0.058	–0.01	0.994
Hispanic	–1.13	0.288	–0.22	0.724	–0.91	0.409
Mother's education	0.20	0.164	–0.14	0.207	0.34	0.010
Respondent's education	0.36	0.012	0.48	0.004	–0.12	0.156
Constant	–7.33	0.004	–3.01	0.216	–4.32	0.059

gender intensification theory (Hill and Lynch 1983) and cognitive-developmental theory (Kohlberg and Ullian 1974). Gender intensification theory implies that attitudes toward masculinity should become increasingly more traditional with the onset of adolescence, although it does not further specify when gender intensification peaks thereafter (Galambos, Almeida, and Petersen 1990). Cognitive-developmental theory posits that cognitive development in adolescence and beyond is associated with decreasingly stereotyped perceptions of gender. Both processes may occur, but their relative impact during the mid-adolescent to early adult period investigated here cannot be gauged on purely theoretical grounds. Based on prior cross-sectional studies, the study's Hypothesis 1 predicted that for masculinity attitudes between mid-adolescence and early adulthood, the cognitive-developmental process is stronger, and thus that the overall trajectory of masculinity attitudes during this period is toward decreasing traditionality. In the first longitudinal study of attitudes toward masculinity across any developmental period, the study's MRM analysis showed that these attitudes become overall less traditional between middle adolescence and early adulthood, supporting Hypothesis 1. The theoretical implication is that at least as regards masculinity attitudes during the period studied, cognitive-developmental processes fostering nontraditional attitudes more than counteract the effects of gender intensification.

The research then tested predictions that patterns of change in attitudes toward masculinity are associated with experience in family contexts (Hypothesis 2) and in peer contexts (Hypothesis 3). Prior research provides a basis for these hypotheses, consistent with the ecological perspective on development (Bronfenbrenner 1979). Neither this research nor theory currently provide a sufficient basis for directional hypotheses about the associations of specific family and peer relations variables with change in masculinity attitudes. Results here, however, can contribute to development of theory, and directional hypotheses, concerning the role of particular family and factors variables in promoting or reducing gender intensification relative to gender.

Preliminary to testing these hypotheses, analyses were conducted showing that within the overall pattern of decreasing traditionality, masculinity attitudes show varying developmental trajectories. These results are consistent with findings in other research documenting varied patterns of change in attitudes toward women (Crouter et al. 2007) and in gendered personal-social qualities (expressivity and instrumentality) and gendered activity interests (McHale et al. 2009). At the individual level, the unconditional model in the MRM analysis yielded a significant random slope, reflecting varying individual trajectory slopes over time. At the group level, the STA trajectory analysis revealed three developmental patterns in masculinity attitudes. The traditional-liberalizing trajectory characterized about half the sample, and traditional-stable and nontraditional-stable trajectories each described about a quarter of the sample. The preponderance of males following the traditional-liberalizing trajectory is consistent with the individual-level analysis finding of an overall trajectory of declining traditionality. At the same time, the STA's identification of two

additional, stable trajectory patterns shows the value of the STA method in revealing patterns of change among males not evident when the MRM approach is utilized.

Supporting Hypothesis 2, both time-varying and time-invariant aspects of family experience were associated with change in masculinity attitudes. In the MRM analysis, change over time in family context was associated with individual-level change in masculinity attitudes. Controlling for demographic factors as well as other family and peer influences, change in paternal coresidence status in the last year was significantly associated with change in attitudes. For example, respondents who lived with their biological fathers at age 15–17 and continued to do so at age 18–20 were more likely to have masculinity attitudes that remain or become relatively more traditional over time, while the attitudes of those who stopped living with their fathers were more likely to become relatively less traditional. This covariation in masculinity attitude trajectories and paternal coresidence trajectories potentially reflects causal influence in both directions. It may be that fathers of boys who continue to live at home are more likely to endorse traditional attitudes themselves and model traditional attitudes for their sons. This “socialization” interpretation is supported by past work that has shown that attitudes toward women among firstborn boys with traditional parents and brothers become more traditional over time (Crouter et al. 2007). Conversely, it is possible that males whose attitudes become or remain relatively more traditional over time may be more likely to choose to continue living with, or be allowed to continue living with their biological fathers. Thus, masculinity attitudes may operate as a “selection” factor for paternal coresidence.

The STA analysis yields additional findings complementing the MRM analysis concerning factors associated with change in masculinity attitudes. Concerning paternal coresidence, the STA analysis reveals that the MRM pattern also holds true specifically within the trajectory groups identified as holding relatively stable beliefs at either traditional or nontraditional levels. That is, although these two trajectory groups are characterized by holding generally stable attitudes, variation in attitudes over time *within* these groups is linked to change in paternal coresidence in the same manner that the MRM analysis finds in the sample as a whole. Both analytic methods suggest that communication with parents during mid-adolescence about reproductive health issues are related to patterns of change in masculinity beliefs. In the MRM analysis, greater communication is linked to less traditional initial attitudes; in the STA, males with consistently nontraditional attitudes reported discussion of more health topics with their parents than did males with consistently traditional beliefs.

Supporting Hypothesis 3, the MRM analysis showed that change in committed heterosexual relationship status in the last year was associated with change in masculinity attitudes. For example, a respondent at age 18–20 who was uncommitted to his current partner when he and she first had sex, and was likewise uncommitted at first sex with his current partner at age 22–24, is more likely to hold masculinity attitudes that remain or become relatively more traditional over time; the attitudes of a similar aged male who had first sex in a current committed relationship were more

likely to become relatively less traditional. Here, too, causal influence can operate in both directions. Experience in relationships in which first sex does not occur without commitment may socialize males to become less traditional in their masculinity attitudes. At the same time, males' developing increasingly less traditional attitudes may lead them to delay having first sex in new relationships until these relationships become committed.

This study has several limitations. First, although the NSAM is an important nationally representative longitudinal cohort of young men and the only existing data source that examines masculinity attitudes over time, it is an older dataset. However, despite changes in U.S. society over the past 20 years, more recent cohorts show similar masculinity attitudes in mid-adolescence (Masciadrelli and Pleck 2004; Smiler 2008), although there is evidence of increasing liberalization in attitudes toward women (Twenge 1997). In addition, these data concern only males in the U.S. Constructions of masculinity may be different in other cultures, although traditional attitudes toward masculinity using the sort of measure employed here have been documented in numerous other societies (Levant and Richmond 2007). Second, the study examines change in masculinity attitudes only between mid-adolescence and early adulthood. Although this age range in development is important in the context of socialization outside of the family, other research finds change in attitudes toward women during earlier periods, and attitudes may vary later in development as well.

Third, many of the predictors of masculinity attitudes examined here were single-item measures, relatively few family context and peer context measures were available as predictors, and only the family and peer measures assessed at all three ages, and thus available as time-varying covariates, were paternal coresidence and committed relationship status. Fourth, given the small proportion of participants who identified as gay or bisexual, this study is not able to describe this subgroup's masculinity trajectories, a topic needing future attention (Levine 1988). Finally, the internal reliability of the masculinity attitudes measure is lower than ideal. Nonetheless, this did not impede the study's ability to identify masculinity attitude trajectories and their predictors, and to classify participants into trajectory groups. Offsetting these limitations are the study's use of data from a national representative sample, giving its results generalizability, and its use of advanced analytic methods for longitudinal data.

Results of the research have implications for theory and future research regarding the role of gender intensification and cognitive development in change in attitudes toward masculinity. First, during the period from mid-adolescence through early adulthood, if gender intensification occurs in these attitudes, its effects are more than outweighed by cognitive-developmental processes promoting decreasing traditionality in attitudes. By contrast, for attitudes about women, gender intensification is the stronger process during ages 15–19, the early part of the period investigated here (Crouter et al. 2007). Second, although prior research has examined family and peer factors associated with varying trajectories attitudes toward women, it has not specifically interpreted these factors as heightening or reducing the effects of gender intensification. This study's findings are consistent with the interpretation that

continued coresidence with one's father, and engaging in heterosexual relationship in which sex occurs before commitment are associated with gender intensification in masculinity attitudes. Alternatively, these family and peer experiences as well as traditional attitudes toward masculinity both reflect an underlying gender-intensification process which is stronger for some men than others. Future work should examine whether study findings hold true among more recent cohorts, study change over a longer developmental period, and employ additional family and peer experience factors. Understanding developmental trajectories of masculinity attitudes from adolescence to adulthood and the influences on these trajectories can help to inform interventions that impact psychosocial outcomes linked to masculinity attitudes during adolescence and later in life.

### **Acknowledgment**

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute for Child Health and Human Development or the National Institutes of Health. We thank Andrew Irwin-Smiler for his comments on an earlier version.

### **Declaration of Conflicting Interests**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### **Funding**

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Support for Dr. Marcell was provided by the National Institute for Child Health and Development (NIH K23 HD47457), for Dr. Sonenstein by the CDC (CDC 1 U48 DP000040-01), and for Dr. Pleck by the CREES, U. S. Department of Agriculture, under Project No. ILLU-45-0366, and by the National Institute for Child Health and Development NIH (R01 HD036948).

### **References**

- Bauer, D. J., and M. J. Shanahan. 2007. "Modeling Complex Interactions: Person-Centered and Variable-Centered Approaches." In *Modeling Contextual Effects in Longitudinal Studies*, edited by T. D. Little, J. A. Bovaird, and N. A. Card, 255–283. Mahwah, NJ: Lawrence Erlbaum.
- Bronfenbrenner, U. 1979. *The Ecology of Human Development*. Cambridge, MA: Harvard University Press.
- Cohen, J., and P. Cohen. 1983. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. 2nd ed. Mahwah, NJ: Lawrence Erlbaum.
- Courtenay, W. H. 1998. "Better to Die than Cry? A Longitudinal and Constructionist Study of Masculinity and the Health Risk Behavior of Young American Men. *Dissertation Abstracts International* 59:Publication number 9902042.

- Crouter, A. C., S. D. Whiteman, S. M. McHale, and D. W. Osgood. 2007. "Development of Gender Attitude Traditionality across Middle Childhood and Adolescence." *Child Development* 78:911–26.
- Galambos, N. L., D. M. Almeida, and A. C. Petersen. 1990. "Masculinity, Femininity, and Sex Role Attitudes in Early Adolescence: Exploring Gender Intensification." *Child Development* 61:1905–14.
- Glick, P., and S. Fiske. 1996. "Differentiating Hostile and Benevolent Sexism." *Journal of Personality and Social Psychology* 70:491–512.
- Hill, J. P., and M. E. Lynch. 1983. "The Intensification of Gender-Related Role Expectations during Early Adolescence." In *Girls at Puberty: Biological and Psychosocial Perspectives*, edited by J. Brooks-Gunn and A. Petersen, 201–28. New York, NY: Plenum.
- Katz, P. A., and K. R. Ksiansnak. 1994. "Developmental Aspects of Gender Role Flexibility and Traditionality in Middle Childhood and Adolescence." *Developmental Psychology* 30:272–82.
- Kohlberg, L., and D. Ullian. 1974. "Stages in the Development of Psychosexual Concepts and Attitudes." In *Sex Differences in Behavior*, edited by R. C. Friedman, R. M. Richart, and R. Vande Wiele, 209–22. New York, NY: Wiley.
- Ku, L. C., F. L. Sonenstein, and J. H. Pleck. 1992. "Patterns of AIDS-Related Risk and Preventive Behaviors among Teenage Men in the U.S.A." *Public Health Reports* 107:131–8.
- Ku, L., S. Williams, L. D. Lindberg, M. Pernas, and G. Martinez. 1999. *Documenting the Public-Use Data Set for the Old Cohort of the 1995 National Survey of Adolescent Males*. Washington, DC: The Urban Institute.
- Laird, N. M., and J. H. Ware. 1982. "Random-Effects Models for Longitudinal Data." *Biometrics* 38:963–74.
- Levant, R. F., L. S. Hirsch, E. Celentano, T. M. Cozza, S. Hill, M. MacEachern, N. Marty, and J. Schnedeker. 1992. "The Male Role: An Investigation of Contemporary Norms." *Journal of Mental Health Counseling* 14:325–37.
- Levant, R. F., and K. Richmond. 2007. "A Review of Research on Masculinity Ideologies using the Male Role Norms Inventory." *Journal of Men's Studies* 15:130–46.
- Levine, M. P. 1988. *Gay Macho*. New York, NY: NYU Press.
- Liben, L. S., and R. S. Bigler. 2002. "The Developmental Course of Gender Differentiation: Conceptualizing, Measuring, and Evaluating Constructs and Pathways." *Monographs of the Society for Research in Child Development* 67:1–183.
- Maccoby, E. 1998. *The Two Sexes: Growing Up Apart, Coming Together*. Cambridge: Harvard University Press.
- Mahalik, J. R., H. D. Lagan, and J. A. Morrison. 2006. "Health Behaviors and Masculinity in Kenyan and U.S. Male College Students." *Psychology of Men and Masculinity* 7:191–202.
- Mahalik, J. R., B. Locke, L. Ludlow, M. Diemer, R. Scott, M. Gottfried, and G. Freitas. 2003. "Development of the Conformity to Masculine Norms Inventory." *Psychology of Men and Masculinity* 4:3–25.
- Martin, C. L., and R. A. Fabes. 2001. "The Stability and Consequences of Young Children's Same-Sex Peer Interactions." *Developmental Psychology* 37:431–46.

- Masciadrelli, B. P., and J. H. Pleck. 2004. "The Influence of Race and Ethnicity on Masculinity Ideology among Adolescent Males: A Replication and Further Exploration." Paper presented at the American Men's Studies Association, Aurora, IL.
- McHale, S. M., J. Y. Kim, A. M. Dotterer, A. C. Crouter, and A. Booth. 2009. "The Development of Gendered Interests and Personality Qualities from Middle Childhood through Adolescence: A Biosocial Analysis." *Child Development* 80:482–95.
- Nagin, D. S. 1999. "Analyzing Developmental Trajectories: A Semiparametric, Group-Based Approach." *Psychological Methods* 4:139–57.
- Nagin, D. S., and R. E. Tremblay. 2001. "Analyzing Developmental Trajectories of Distinct but Related Behaviors: A Group-Based Method." *Psychological Methods* 6:18–34.
- Neff, J. A., T. J. Prihoda, and S. K. Hoppe. 1991. "'Machismo,' Self-Esteem, Education and High Maximum Drinking among Anglo, Black and Mexican-American Male Drinkers." *Journal of Studies on Alcohol and Drugs* 52:458–63.
- Pleck, J. H. 1995. "The Gender Role Strain Paradigm: An Update." In *A New Psychology of Men*, edited by R. F. Levant and W. S. Pollack, 11–32. New York, NY: Basic Books.
- Pleck, J. H., and L. N. O'Donnell. 2001. "Gender Attitudes and Health Risk Behaviors in Urban African American and Latino Early Adolescents." *Journal of Maternal and Child Health* 5:265–72.
- Pleck, J. H., F. L. Sonenstein, and L. C. Ku. 1993a. "Masculinity Ideology: Its Impact on Adolescent Males' Heterosexual Relationships." *Journal of Social Issues* 49:11–29.
- Pleck, J. H., F. L. Sonenstein, and L. C. Ku. 1993b. "Masculinity Ideology and its Correlates." In *Gender Issues in Social Psychology*, edited by S. Oskamp and M. Costanzo, 85–110. Newbury Park, CA: Sage.
- Pleck, J. H., F. L. Sonenstein, and L. C. Ku. 1994. "Attitudes Toward Male Roles among Adolescent Males: A Discriminant Validity Analysis." *Sex Roles* 30:481–501.
- Pulerwitz, J., and G. Barker. 2008. "Measuring Attitudes Toward Gender Norms among Young Men in Brazil: Development and Evaluation of the GEM Scale." *Men and Masculinities* 10:322–8.
- Rosenthal, R., R. Rosnow, and D. Rubin. 2000. *Contrasts and Effect Sizes in Behavioral Research*. Cambridge: Cambridge University Press.
- Schwarz, G. 1978. "Estimating the Dimension of a Model." *Ann Statistics* 6:461–4.
- Singer, J. D., and J. B. Willett. 2003. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. New York, NY: Oxford Press.
- Smiler, A. P. 2004. "Thirty Years after the Discovery of Gender: Psychological Concepts and Measures of Masculinity." *Sex Roles* 50:15–26.
- Smiler, A. P. 2008. "'I Wanted to Get to Know Her Better': Adolescent Boys' Dating Motives, Masculinity Ideology, and Sexual Behavior." *Journal of Adolescence* 31:17–32.
- Spence, J. T., and R. L. Helmreich. 1972. "The Attitudes Toward Women Scale: An Objective Instrument to Measure Attitudes Toward the Rights and Roles of Women in Contemporary Society." *JSAS Catalog of Selected Documents in Psychology* 2:66.
- Thompson, E. H., and J. H. Pleck. 1986. "The Structure of Male Role Norms." *American Behavioral Scientist* 29:531–43.

- Thompson, E. H., and J. H. Pleck. 1995. "Masculinity Ideologies: A Review of Research Instrumentation on Men and Masculinities." In *A New Psychology of Men*, edited by R. F. Levant and W. S. Pollack, 129–63. New York, NY: Basic Books.
- Twenge, J. M. 1997. "Attitudes Toward Women, 1970-1995." *Psychology of Women Quarterly* 21:35–51.

## Bios

**Arik V. Marcell** is an Assistant Professor at the Johns Hopkins University School of Medicine. His research has focused on adolescent males' reproductive health needs and barriers to care.

**Sorina E. Eftim** is a Senior Associate at the ICF International, The Environmental Risk and Toxicology Division. Her research expertise is in statistical methods for analyzing the health effects of short- and long-term exposure to air pollution.

**Freya L. Sonenstein** is a Professor at the Johns Hopkins University Bloomberg School of Public Health. Her research has focused on sexual and reproductive health with special emphases on adolescents and males. She is currently conducting an analysis of how young men establish stable romantic relationships.

**Joseph H. Pleck** is a Professor of Human Development and Family Studies at the University of Illinois at Urbana-Champaign. His research has focused on fatherhood, work–family dynamics, adolescent risk behaviors, and masculinity. His most recent publications are "Fatherhood and masculinity" and "Paternal involvement: Revised conceptualization and theoretical linkages with child outcomes," both in M. E. Lamb (Ed.), *The role of the father in child development* (Wiley, 2010).