The Later, the Better?
Early, Average, and Late Timing of Sexual Experiences in Adolescence and Psychosocial Adjustment in Young Adulthood

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Abstract. The present article challenges the assumption that later timing of sexual experiences is unequivocally associated with higher psychosocial adjustment. Data from two representative cross-sectional German studies conducted in 1996 and 2005 were analyzed to examine the psychosocial adjustment of young adults (age 20–29) who had their first sexual experiences early (before age 16), at an average age (between age 16 and 18), or late (later than age 18 or not yet). Early timing of sexual experiences was associated with lower educational attainment. Late timing of sexual experiences was associated with poorer social relations. Early and late timing of sexual experiences were associated with lower subjective well-being. Results were replicated across the two studies and controlled for sociodemographic characteristics and (in Study 1) early adversities, parental involvement, and pubertal timing. These findings show that not only early but also late timing of first sexual experiences can be associated with lower psychosocial adjustment in selected domains in young adulthood. Further research is needed to understand maladaptive correlates of late sexual timing.

Keywords: sexual experiences, sexual abstinence, timing, psychosocial adjustment, adolescence

The belief that delaying sexual experiences in adolescence is beneficial is widely popular and at the core of public policy efforts to promote sexual abstinence among adolescents (Santelli et al., 2006). Many studies show that early timing of sexual experiences is linked to lower adjustment in many life domains (for a review see Zimmer-Gembeck & Helfand, 2008). Is later timing of sexual experiences hence unequivocally associated with higher adjustment?

Psychological and sociological theories of lifespan development suggest that not only early but also late timing in resolving developmental tasks can be maladaptive (e.g., Havighurst, 1976; Heckhausen, 1999; Heckhausen, Wrosch, & Schulz, 2010; Neugarten & Neugarten, 1996; Settersten, 2009). These theories contrast the implications of being "on time" and being "off time" and suggest that being "off time," whether early or late, is associated with lower adjustment. One prominent psychological framework is the motivational theory of lifespan development (e.g., Heckhausen, 1999; Heckhausen et al., 2010). The theory postulates that being off time with regard to developmental tasks may be maladaptive because individuals are out of sync with age-graded opportunities for engaging in these tasks. If we think about the timing of sexual experiences, early timing may be maladaptive because adolescents lack biological, cognitive, and psychosocial maturity (Steinberg, 2008) and may get distracted from other developmental tasks that are important in adolescence (Havighurst, 1976). This suggests lower adjustment in domains such as education (see also Haase, Tomasik, & Silbereisen, 2008). In contrast, late timing of sexual experiences may be maladaptive because adolescents delay what has been labeled a major developmental task of adolescence and forego opportunities for exploration and intimacy (Diamond & Savin-Williams, 2009; Zimmer-Gembeck & Helfand, 2008). This suggests lower adjustment in the social domain. Finally, being off time, whether early or late, may take its toll on subjective well-being.

Early, average, and late timing are relative and can be defined drawing from statistical, legal, or conventional criteria. As for statistical criteria, researchers have taken the lower and upper 25% of the sample distribution as

cut-off ages to define early and late sexual timing (e.g., Sandfort, Orr, Hirsch, & Santelli, 2008). As for legal criteria, one may consider the age of sexual consent as a cut-off age for early sexual timing and the age of majority as a cut-off age for late sexual timing. As for conventional criteria, many researchers define sexual intercourse occurring before age 16 as early and sexual intercourse occurring later than age 18 as late as evidenced in the latest review of adolescent sexual behavior (Zimmer-Gembeck & Helfand, 2008).

This latest review, which focused on research conducted in the US (Zimmer-Gembeck & Helfand, 2008), shows that the vast majority of studies has linked early sexual timing to lower adjustment in many life domains; and studies conducted in European countries portray a similar picture (e.g., Magnusson & Trost, 2006; Meschke & Silbereisen, 1997). We briefly review previous research, focusing on associations between sexual timing and outcomes in the realm of education, social relations, and well-being. Early sexual intercourse is associated with lower academic motivation and achievement in the short run (Bingham & Crockett, 1996; Martin et al., 2005) as well as lower educational attainment in the long run (Magnusson & Trost, 2006; Spriggs & Halpern, 2008b). The effects appear to be small, for men even more so than for women (Spriggs & Halpern, 2008b). Regarding social relations, early sexual intercourse is linked to lower relationship quality with parents but not peers (Bingham & Crockett, 1996), spending more time with friends and partying (Meschke & Silbereisen, 1997), and, among boys, having peers with low achievement orientation (Meschke, Zweig, Barber, & Eccles, 2000). Regarding well-being, early sexual intercourse is associated with higher future pessimism and depressive symptoms (e.g., Longmore, Manning, Giordano, & Rudolph, 2004; Martin et al., 2005). Notably, some of these studies show that the association between early sexual intercourse and low well-being is bidirectional and may vanish over time (e.g., Spriggs & Halpern, 2008a).

Empirical evidence that not only early but also late sexual timing could be associated with lower psychosocial adjustment is sparse. One reason is that nonlinear associations between sexual timing (contrasting early, average, and late timing) and psychosocial adjustment have rarely been studied. Moreover, maladjustment may present itself not only as a presence of negative aspects (often the focus in previous studies) but also as an absence of positive aspects (Seligman & Csikszentmihalyi, 2000). For example, whereas many studies have investigated associations between sexual timing and depressive symptoms (e.g., Longmore et al., 2004; Martin et al., 2005), only few have examined positive affect although both negative and (inverse) positive affect are important aspects (Diener, 2000). Yet, some findings provide initial hints that late sexual timing may be associated with lower psychosocial adjustment. Late sexual intercourse is associated with poor relationships with peers (Bingham & Crockett, 1996) and, among boys, with higher anxiety (Capaldi, Crosby, & Stoolmiller, 1996). Moreover, drawing from a large representative cross-sectional study conducted in the US, Sandfort et al. (2008) showed that both early as well as late

sexual intercourse are associated with poorer sexual health in adulthood.

If we turn to other developmental tasks and transitions, substantial evidence indicates that both early and late timing can be maladaptive. This has been demonstrated by research on pubertal timing (Weichold, Silbereisen, & Schmitt-Rodermund, 2003). Moreover, studies drawing from the motivational theory of lifespan development show that being off time with regard to developmental tasks such as having children (Heckhausen, Wrosch, & Fleeson, 2001) or finding a partner (Wrosch & Heckhausen, 1999) is maladaptive (for a review see Heckhausen et al., 2010).

When studying associations between sexual timing and psychosocial adjustment, confounding variables need to be considered. The present article examines sociodemographic characteristics and early antecedents. As for sociodemographic characteristics, we focus on age, gender, the presence of own children, geographic region, and parental education (cf. Zimmer-Gembeck & Helfand, 2008). As for early antecedents, we focus on early childhood adversities, parental involvement in childhood, and pubertal timing drawing from the evolutionary theory by Belsky, Steinberg, and Draper (1991). Belsky et al. (1991) postulate that children whose parents show little involvement and who experience early adversities such as the death of a parent or parental divorce adopt a so-called quantitative reproduction strategy. The evolutionary argument is that these early life experiences convey to the developing child that others do not care and that adversity is likely to strike, making it evolutionary imperative to have own offspring rather sooner than later – before oneself dies. Belsky et al. (1991) assume that early adversities lead to earlier physical maturation, which in turn leads to earlier sexual timing. Sexual timing in turn is expected to predict further adjustment over and above earlier experiences following the logic of a cumulative risk model (Belsky et al., 1991). Longitudinal findings support core propositions of the theory (e.g., Belsky, Steinberg, Houts, & Halpern-Felsher, 2010).

Finally, despite the scientific and public interest, few studies on sexual timing have been replicated (Zimmer-Gembeck & Helfand, 2008). A largely unexamined question is whether associations between sexual timing and psychosocial adjustment remain stable across cohorts. This is surprising given that sexual behaviors and attitudes have become increasingly lenient over the last decades (e.g., Wells & Twenge, 2005), which raises the possibility that the timing of sexual experiences increasingly loses significance in younger cohorts (cf. Settersten, 2009). Recent studies show that sexual timing continues to matter for psychosocial adjustment (Zimmer-Gembeck & Helfand, 2008), but systematic attempts to replicate findings across cohorts are missing.

The Present Studies

The present article examines associations between the timing of first sexual experiences in adolescence and psychosocial adjustment among young adults in Germany. We

challenge the assumption that later sexual timing is unequivocally associated with higher psychosocial adjustment.

The present studies examine the timing of "first sexual experiences" (Meschke & Silbereisen, 1997), which may refer to a variety of sexual behaviors such as cuddling, kissing, petting, oral sex, and sexual intercourse (cf. Gute, Eshbaugh, & Wiersma, 2008; Sanders & Reinisch, 1999) and which we conceive as an indicator of the end of sexual abstinence. Individuals themselves (see, e.g., Sanders & Reinisch, 1999) and researchers (see, e.g., Blinn-Pike, Berger, Hewett, & Oleson, 2004) often define sexual abstinence as abstinence from sexual intercourse specifically. Yet, abstinence programs may define sexual abstinence as abstinence from a wide range of sexual experiences including "touching, kissing, mutual masturbation, oral sex, and anal sex" (Santelli et al., 2006, p. 73). In this article, we follow the definition of abstinence used by these abstinence programs as our goal is to challenge a central assumption put forth by these programs that later timing of sexual experiences (entailing all kinds of sexual behaviors) is unequivocally associated with higher psychosocial adjustment. To define early, average, and late timing of sexual experiences, statistical, legal, and conventional criteria were considered and showed sufficient convergence. Similar to many states in the US (Zimmer-Gembeck & Helfand, 2008), 16 is the age of sexual consent and 18 is the age of majority in Germany. The present studies for the most part involved individuals born in the 1970s (see Method section) where the average age of first sexual experiences was about age 17 (Meschke & Silbereisen, 1997). Note that, in accordance with many other studies that have found earlier sexual timing among younger cohorts (Wells & Twenge, 2005), among Germans born in the 1990s about 65% already had their first sexual intercourse by age 17 (BZgA, 2010). Thus, for the present studies, first sexual experiences before age 16 were defined as early and first sexual experiences later than age 18 or not yet were defined as late. As we will show below, using these cut-off ages, the majority of participants was assigned to the average timing group.

We examined psychosocial adjustment in three domains – educational attainment, social relations, and well-being. As indicators of social relations, we studied whether individuals had a romantic partner and a true friend. As indicators of well-being, we examined positive affect and depressive symptoms (Diener, 2000). The present paper focuses on psychosocial adjustment among young adults in their third decade of life for whom adjustment in these domains is important in and of themselves. Moreover, adjustment in these domains predicts adjustment in other domains such as career success and physical health (Furnée, Groot, & van den Brink, 2008; House, Landis, & Umberson, 1988; Lyubomirsky, King, & Diener, 2005).

Hypotheses

We expected early as well as late sexual timing in adolescence to be associated with lower psychosocial adjustment in young adulthood. Specifically, we expected early sexual timing to be associated with lower educational attainment. In contrast, we expected late sexual timing to be associated with poorer social relations indicated by a lower likelihood to have a romantic partner and a true friend. Both early and late sexual timing were expected to be associated with lower subjective well-being indicated by lower positive affect and higher depressive symptoms. We expected these associations to hold over and above a number of covariates. Specifically, we included sociodemographic characteristics (i.e., age, gender, children, region, (in Study 1) parental education) and (in Study 1) early antecedents (i.e., early adversities in childhood, parental involvement in childhood, and pubertal timing) as covariates. In addition, we expected associations for one domain of psychosocial adjustment (e.g., educational attainment) to remain stable when controlling for psychosocial adjustment in the other domains (e.g., social relations and subjective well-being). We did not have hypotheses for associations between late sexual timing and educational attainment or between early sexual timing and social relations but we explored these associations. Moreover, we explored interaction effects between sexual timing and gender.

The hypotheses were examined using data from two large representative cross-sectional German studies following the example of other representative cross-sectional studies (Martin et al., 2005; Sandfort et al., 2008). We sought to replicate the findings across the two studies, which were launched about one decade apart, to test the robustness of the findings across cohorts.

Method

Participants

Data from two large representative cross-sectional German studies were analyzed. The large sample sizes provided sufficient statistical power to detect the supposedly small timing effects (cf. Spriggs & Halpern, 2008b). In both studies, trained interviewers from professional field research institutes collected the data in standardized face-to-face interviews. Participation was voluntary. No compensation was paid.

Study 1 was conducted in 1996. The sample was a nationally representative quota sample collected from East and West German adolescents and young adults. Quota sampling ensures relative sample representativeness (Henry, 1990). First, an overall sample size was established ($N = 3,275$) following typical sample sizes for nationally representative youth studies in Germany (cf. Deutsche Shell, 2002). Then, the sample was stratified to match the population of German adolescents and young adults based on the sociodemographic characteristics of federal state, community size, age, education, and gender. Finally, interviewers from regions across Germany received specific sociodemographic profiles based on these stratification variables and recruited four to eight individuals per profile through various community contacts. More detailed information on the sample and procedure can be found in Silbereisen and Zinnecker

(1999). As quota sampling was used, a response rate was not available. All young adults in their third decade of life (age 20–29) were selected for the present analyses from the total sample of 2,861 participants, which encompassed a wider age range (age 13–29). By virtue of the selection criterion, participants selected for the present analyses (age 20–29) and participants not selected for the present analyses (age 13–19) differed in age; and sociodemographic and psychosocial differences between selected and nonselected participants reflected sociodemographic and psychosocial differences associated with age. For example, the mean age of first sexual experiences was different as older individuals reported a higher mean age of first sexual experiences (Cox regression: Exp(B) = .99, p < .01). The final size of the selected sample was 1,828 (age: M = 24.68, SD = 2.87, range = 20–29; born between 1967 and 1976; 51.9% females).

Study 2 was conducted in 2005. The sample was a representative random route sample collected from adolescents and adults from two federal states in the East and two federal states in the West of Germany. The sample was stratified by county and community size. Representative sampling points were selected based on census data and participants were subsequently identified based on a random route procedure. The sample showed good representativeness regarding major sociodemographic characteristics including age, education, and gender. More detailed information on the sample and procedure can be found in Silbereisen and Pinquart (2008). The response rate of Study 2 was 77%. All young adults in their third decade of life (age 20–29) were selected for the present analyses from the total sample of 2,861 participants, which encompassed a wider age range (age 16–43). Again, by virtue of the selection criterion, participants selected for the present analyses (age 20–29) and participants not selected for the present analyses (age 16–19 and 30–43) differed in age; and sociodemographic and psychosocial differences between selected and nonselected participants reflected sociodemographic and psychosocial differences associated with age. For example, again, the mean age of first sexual experiences was different as older individuals reported a higher mean age of first sexual experiences (Cox regression: Exp(B) = .99, p < .001). Among the selected participants (age 20–29) 63 participants did not provide data on sexual timing and were not included in the final analyses. These participants and participants included in the final analyses did not differ on any of the study variables (all p values > .05) with one exception: Participants with missing sexual timing data were more likely to come from West Germany (r = −.09, p < .05). The final size of the selected sample was 777 (age: M = 24.94, SD = 2.78, range = 20–29; born between 1976 and 1985; 52.3% females).

Measures

Timing of First Sexual Experiences

The present studies used a measure of sexual timing following the example of the Shell Youth Studies (Deutsche Shell, 2002), a series of representative German studies on development in adolescence and young adulthood, which has a long tradition spanning several decades (for studies drawing from these data see, e.g., Haase, Silbereisen, & Reitzle, 2008; Meschke & Silbereisen, 1997; Silbereisen, 2005). Due to ethical concerns about the appropriate wording in a survey for young people, the Shell Youth Studies traditionally assess the timing of "first sexual experiences" without further specifying the kind of sexual behavior. Following the example of the Shell Youth Studies, the present studies also assessed the timing of "first sexual experiences" as they included participants from wide age ranges including very young ones (Study 1: age 13–29; Study 2: age 16–43; see above). The measure of "first sexual experiences" had been used in a previous study (Meschke & Silbereisen, 1997) and served as an indicator of the end of sexual abstinence (cf. Santelli et al., 2006). As in many previous studies, sexual timing was measured retrospectively (Zimmer-Gembeck & Helfand, 2008).

The mean age of first sexual experiences was 17.28 years in Study 1 (1996) and 16.64 years in Study 2 (2005). Individuals who had their first sexual experiences before age 16 were assigned to the early timing group (Study 1: 25.4%; Study 2: 25.2%). Individuals who had their first sexual experiences later than age 18 or not yet were assigned to the late timing group (Study 1: 17.6%; Study 2: 11.7%). The majority of young adults had their first sexual experiences between age 16 and 18 and were assigned to the average timing group (Study 1: 57.1%; Study 2: 55.6%). In Study 1, all participants provided sexual timing data. In Study 2, 63 participants did not provide data on sexual timing and were not included in the present analyses (see above).

Educational Attainment

Educational attainment was assessed by a recoded census item ("What is your highest education level?"; 1 = eight or less years of education, lower-tier school track; 2 = 10 years of education, middle-tier school track; 3 = 12 or 13 years of education, higher-tier school track).

Social Relations

Having a *romantic partner* was measured by a census item ("What is your current partnership situation?"). Answers were recoded into a dichotomous variable indicating whether participants had a romantic partner irrespective of legal status or not. Having no romantic partner (0) was coded when individuals were single without a partner (Study 1: 34.0%; Study 2: 43.8%) or divorced without a partner (Study 1: .8%; Study 2: .8%). Having a romantic partner irrespective of legal status (1) was coded when individuals had a partner and were not cohabiting (Study 1: 24.0%; Study 2: 17.5%), had a partner and were cohabiting (Study 1: 19.8%; Study 2: 21.3%), were married (Study 1: 19%; Study 2: 15.7%), were married but separated (Study 1: .9%; Study 2: .4%), or were divorced and had a new partner (Study 1: 1.3%; Study 2: .5%).

Having a *true friend* of the same gender was assessed by one item ("Do you have a true male friend?" (men); "Do you have a true female friend?" (women); 0 = no; 1 = yes). This measure was only available in Study 1.

Subjective Well-Being

In Study 1, the German 15-item version of the Center for Epidemiologic Studies Depression Scale (CESD, Radloff, 1991) was administered, which measured affective states experienced during the last week. *Positive affect* was measured by the positive affect subscale of the CESD (Pressman & Cohen, 2005; Sheehan, Fifield, Reisine, & Tennen, 1995) (e.g., "I was in a joyful mood."; 2 items; $\alpha = .69$). *Depressive symptoms* were measured by the remaining CESD items (e.g., "I was sad."; 13 items; $\alpha = .89$).

In Study 2, *positive affect* during the last month was measured by the joy subscale (Egloff, Schmukle, Burns, Kohlmann, & Hock, 2003) of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) (e.g., "enthusiastic"; 3 items; $\alpha = .77$). *Depressive symptoms* during the last month were measured by the depression subscale of the Brief Symptom Inventory (Derogatis, 1993) (e.g., "feeling hopeless about the future"; 6 items; $\alpha = .88$).

Covariates

The following measures of sociodemographic characteristics were used. *Age* was measured in years. *Gender* was coded as male (0) or female (1). Having *children* was coded as having no children (0) or at least one child (1). Geographic *region* was coded as West (0) or East (1) Germany. *Parental education* was measured by two items indicating the highest education attained by mother and father using a recoded census item ("What is your mother's (father's) highest education level?"; 1 = eight or less years of education, lower-tier school track; 2 = 10 years of education, middle-tier school track; 3 = 12 or 13 years of education, higher-tier school track). Parental education was only assessed in Study 1.

Moreover, the following measures of early antecedents were available in Study 1. *Early adversities in childhood* were measured using a count variable of 10 stressful life events (adapted from Brugha, Bebbington, Tennant, & Hurry, 1985) experienced before age 10 (e.g., death of a parent, parental divorce, and serious illness). *Parental involvement in childhood* (referring to age 6–12) was measured by eight items (e.g., "My parents regularly helped me with my homework."; 1 = completely disagree; 4 = completely agree; $\alpha = .77$). *Subjective pubertal timing* was measured by an item adapted from Dubas, Graber, and Petersen (1991) ("When you think back to your body development when you were about 13 or 14 years old, that is, in 7th or 8th grade, how did it compare to your classmates?"; 1 = a lot earlier; 5 = a lot later). Two dummy variables were derived indicating early subjective pubertal timing (answer categories 1 or 2) and late subjective pubertal timing (answer categories 4 or 5). *Physical pubertal timing* was measured by the age at growth spurt (in height) adapted from the Pubertal Development Scale (Petersen, Crockett, Richards, & Boxer, 1988) (i.e., "How old were you when you had your growth spurt?"; in full years). According to Petersen et al. (1988), age at growth spurt is "especially relevant as a measure of pubertal timing" (p. 126). Average physical pubertal timing was coded when the growth spurt occurred between age 11 and 13 (girls) or between age 12 and 14 (boys). Two dummy variables were derived indicating early physical pubertal timing (age at growth spurt before age 11 for girls/age 12 for boys) and late physical pubertal timing (age at growth spurt later than age 13 for girls/age 14 for boys).

Statistical Analyses

Data were analyzed using SPSS. Various preliminary analyses were conducted including an analysis of the correlations between sexual timing and the covariates.

To test the hypotheses, hierarchical linear or logistic regression analyses were conducted to predict psychosocial adjustment (i.e., educational attainment, social relations, and subjective well-being) by the timing of sexual experiences. For educational attainment and subjective well-being, hierarchical linear regression analyses were used. For social relations, logistic regression analyses were used. For these analyses, odds ratios (Exp(B)) are reported. Odds ratios > 1 indicate a higher likelihood and odds ratios < 1 indicate a lower likelihood to have a romantic partner or a true friend, respectively.

The regression analyses proceeded in four steps. Predictors were included blockwise in these four steps using the SPSS enter command. In the first step, covariates (i.e., sociodemographic characteristics and early antecedents) were included as predictors. In the second step, the two dummy variables indicating early and late sexual timing were included to examine whether sexual timing predicted psychosocial adjustment over and above the covariates. In the third step, the dependent variables from the two other domains of psychosocial adjustment were included to test the stability of the results. Thus, when predicting educational attainment, social relations and subjective well-being were added. When predicting social relations, educational attainment and subjective well-being were added. When predicting subjective well-being, educational attainment, and social relations were added. In the fourth step, interaction terms between sexual timing and gender were included to examine whether gender moderated associations between sexual timing and psychosocial adjustment. Due to space constraints, results for the first two steps are reported in the tables; results for the third and fourth steps are reported in the text.

Results

The correlation analyses showed that the timing of first sexual experiences was associated with select sociodemographic

characteristics and early antecedents. In Study 1, early sexual timing was correlated with male gender ($r = -.06$, $p < .05$), higher early adversities ($r = .10$, $p < .001$), and lower parental involvement in childhood ($r = -.07$, $p < .01$). Moreover, early sexual timing was positively correlated with early subjective ($r = .12$, $p < .001$) and early physical ($r = .05$, $p < .05$) pubertal timing and was negatively correlated with late subjective ($r = -.09$, $p < .001$) and late physical ($r = -.10$, $p < .001$) pubertal timing. Late sexual timing was negatively correlated with early subjective ($r = -.06$, $p < .05$) pubertal timing and was positively correlated with late subjective ($r = .10$, $p < .001$) and late physical ($r = .08$, $p < .01$) pubertal timing. In Study 2, late sexual timing was correlated with male gender ($r = -.07$, $p < .05$) and a lower likelihood to have children ($r = -.09$, $p < .05$). Correlations were small, which indicated that no multicollinearity was present in the following regression analyses.

Timing of First Sexual Experiences and Educational Attainment in Young Adulthood

Table 1 presents the results for covariates and timing of first sexual experiences as predictors of educational attainment in young adulthood. Figure 1 presents an overview on the effect sizes. In sum, early sexual timing predicted lower educational attainment over and above the covariates. This finding was replicated across Study 1 and Study 2.

When controlling for social relations and subjective well-being, the results remained stable. In Study 1, these variables did not predict additional variance in educational attainment (Study 1: $\Delta R^2 = .003$, $p = .157$). In Study 2, they did ($\Delta R^2 = .011$, $p < .05$), but early sexual timing continued to predict lower educational attainment ($\beta = -.16$, $p < .001$). No interaction effects between gender and sexual timing were found.

Timing of First Sexual Experiences and Social Relations in Young Adulthood

Tables 2 and 3 present the results for covariates and timing of first sexual experiences as predictors of having a romantic partner (Table 2) and a true friend (Table 3) in young adulthood. Figure 1 presents an overview on the effect sizes. In sum, late sexual timing predicted poorer social relations over and above the covariates. Specifically, late sexual timing predicted a lower likelihood to have a romantic partner. This finding was replicated across Study 1 and Study 2. Moreover, late sexual timing predicted a lower likelihood to have a true friend in Study 1 (this measure was only available in Study 1).

When controlling for educational attainment and subjective well-being, the results remained stable. For partnership status, these variables predicted additional variance (Study 1: $\Delta\chi^2(3) = 10.66$, $p < .05$; Study 2: $\Delta\chi^2(3) = 13.27$, $p < .01$), but late sexual timing continued to predict a lower likelihood to have a romantic partner (Study 1: Exp(B) = .66, $p < .01$; Study 2: Exp(B) = .53, $p = .05$; interaction terms between gender and sexual timing included). For friendship status, educational attainment and subjective well-being did not predict additional variance (Study 1: $\Delta\chi^2(3) = 3.49$, $p = .322$). No interaction effects between gender and sexual timing were found.

Table 1. Educational attainment in young adulthood predicted by covariates and timing of first sexual experiences

| | Study 1 (1996) | | | | | | Study 2 (2005) | | | | | |
| | Step 1 | | | Step 2 | | | Step 1 | | | Step 2 | | |
	B	$SE(B)$	β	B	$SE(B)$	β	B	$SE(B)$	β	B	$SE(B)$	β
Age	.03	.01	.12***	.03	.01	.12***	.01	.01	.05	.01	.01	.04
Gender	.07	.03	.05*	.06	.03	.04	.32	.05	.22***	.31	.05	.21***
Children	−.19	.04	−.11***	−.19	.04	−.11***	−.44	.06	−.27***	−.42	.06	−.25***
Region	−.09	.03	−.06**	−.09	.03	−.07**	.16	.05	.11**	.15	.05	.10**
Mother's education[a]	.17	.03	.18***	.17	.03	.18***	–	–	–	–	–	–
Father's education[a]	.22	.03	.25***	.22	.03	.25***	–	–	–	–	–	–
Early adversities[a]	−.04	.02	−.05*	−.04	.02	−.04	–	–	–	–	–	–
Parental involvement[a]	.16	.03	.12***	.15	.03	.11***	–	–	–	–	–	–
Early subjective PT[a]	.05	.04	.02	.06	.04	.03	–	–	–	–	–	–
Late subjective PT[a]	.06	.04	.03	.06	.04	.03	–	–	–	–	–	–
Early physical PT[a]	.07	.04	.04	.07	.04	.04	–	–	–	–	–	–
Late physical PT[a]	.01	.03	.01	.01	.03	.01	–	–	–	–	–	–
Early sexual timing	–	–	–	−.13	.04	−.08***	–	–	–	−.27	.06	−.16***
Late sexual timing	–	–	–	−.05	.04	−.03	–	–	–	−.05	.08	−.03
R^2		.21			.22			.09			.11	

Notes. PT = pubertal timing. [a]Measure available only in Study 1.
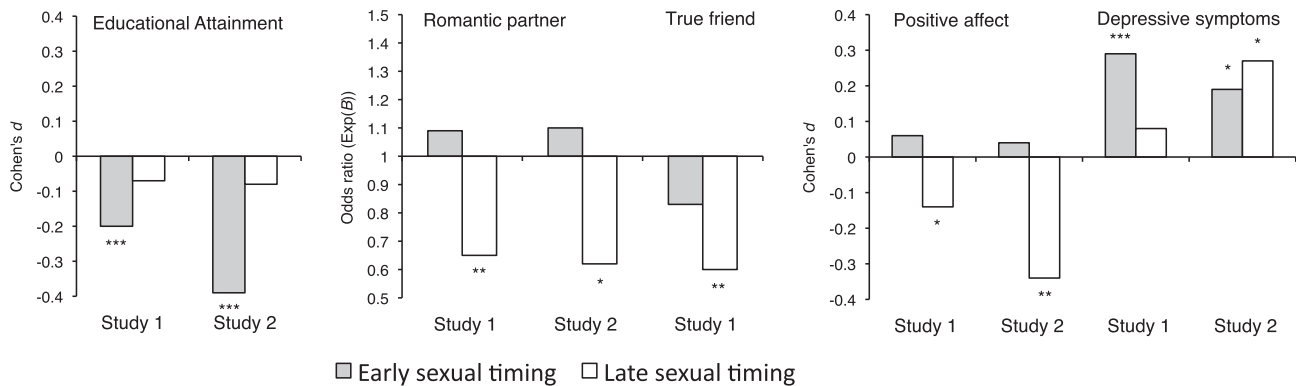*$p < .05$. **$p < .01$. ***$p < .001$.

Figure 1. Timing of sexual experiences and psychosocial adjustment in young adulthood: Effect sizes in comparison to average sexual timing. Results are based on Step 2 of regression analyses (i.e., controlled for sociodemographic characteristics and (in Study 1) early adversities, parental involvement, and pubertal timing). *$p < .05$. **$p < .01$. ***$p < .001$.

Table 2. Presence of romantic partner in young adulthood predicted by covariates and timing of first sexual experiences

| | Study 1 (1996) | | | | | | Study 2 (2005) | | | | | |
| | Step 1 | | | Step 2 | | | Step 1 | | | Step 2 | | |
	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Age	.05	.02	1.05*	.05	.02	1.06**	.11	.03	1.11***	.11	.03	1.12***
Gender	.43	.11	1.54***	.43	.11	1.54***	.31	.16	1.37*	.30	.16	1.35
Children	1.78	.20	5.95***	1.74	.20	5.70***	1.43	.21	4.19***	1.40	.21	4.04***
Region	.12	.11	1.12	.11	.11	1.11	.12	.16	1.12	.14	.16	1.15
Mother's education[a]	−.22	.10	.80*	−.22	.10	.80*	–	–	–	–	–	–
Father's education[a]	−.01	.09	.99	−.02	.09	.98	–	–	–	–	–	–
Early adversities[a]	−.13	.07	.88	−.14	.07	.87*	–	–	–	–	–	–
Parental involvement[a]	.03	.11	1.03	.03	.11	1.03	–	–	–	–	–	–
Early subjective PT[a]	−.03	.16	.97	−.05	.16	.95	–	–	–	–	–	–
Late subjective PT[a]	−.01	.15	1.00	.05	.15	1.05	–	–	–	–	–	–
Early physical PT[a]	.06	.15	1.06	.05	.15	1.05	–	–	–	–	–	–
Late physical PT[a]	−.47	.12	.62***	−.45	.12	.64***	–	–	–	–	–	–
Early sexual timing	–	–	–	.09	.13	1.09	–	–	–	.09	.18	1.10
Late sexual timing	–	–	–	−.43	.14	.65**	–	–	–	−.47	.24	.62*
Nagelkerke's R^2		.17			.18			.17			.17	

Notes. PT = pubertal timing. [a]Measure available only in Study 1.
*$p < .05$. **$p < .01$. ***$p < .001$.

Timing of First Sexual Experiences and Subjective Well-Being in Young Adulthood

Tables 4 and 5 present the results for covariates and timing of first sexual experiences as predictors of positive affect (Table 4) and depressive symptoms (Table 5) in young adulthood. Figure 1 presents an overview on the effect sizes. In sum, both early and late sexual timing predicted lower subjective well-being over and above the covariates. Specifically, late sexual timing predicted lower positive affect. This finding was replicated across Study 1 and Study 2. Early sexual timing predicted higher depressive symptoms. This finding was also replicated across Study 1 and Study 2.

Moreover, late sexual timing predicted higher depressive symptoms in Study 2.

When controlling for educational attainment and social relations, the results remained stable. For positive affect, these variables did not predict additional variance in Study 1 ($\Delta R^2 = .003$, $p = .157$). In Study 2, they did ($\Delta R^2 = .015$, $p < .01$), but late sexual timing continued to predict lower positive affect ($\beta = −.11$, $p < .01$). For depressive symptoms, educational attainment and social relations predicted additional variance (Study 1: $\Delta R^2 = .007$, $p < .01$; Study 2: $\Delta R^2 = .023$, $p < .001$), but early sexual timing continued to predict higher depressive symptoms (Study 1: $\beta = .13$, $p < .001$; Study 2: $\beta = .08$, $p < .05$). In addition,

Table 3. Presence of true friend in young adulthood predicted by covariates and timing of first sexual experiences

| | Study 1 (1996) | | | | | |
| | Step 1 | | | Step 2 | | |
	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Age	−.08	.02	.92***	−.08	.02	.93**
Gender	−.06	.12	.95	−.08	.12	.93
Children	−.24	.15	.79	−.28	.15	.76
Region	−.20	.12	.82	−.22	.12	.80
Mother's education[a]	−.03	.11	.97	−.03	.11	.97
Father's education[a]	.11	.10	1.12	.11	.11	1.12
Early adversities[a]	.11	.08	1.12	.12	.08	1.13
Parental involvement[a]	.31	.12	1.36**	.31	.12	1.36*
Early subjective PT[a]	−.01	.17	.99	−.01	.17	.99
Late subjective PT[a]	−.20	.16	.82	−.17	.16	.85
Early physical PT[a]	−.28	.16	.76	−.30	.16	.74
Late physical PT[a]	−.28	.13	.76*	−.27	.13	.77*
Early sexual timing	–	–	–	−.18	.15	.83
Late sexual timing	–	–	–	−.51	.16	.60**
R^2		.05			.06	

Notes. PT = pubertal timing. [a]Measure available only in Study 1.
*p < .05. **p < .01. ***p < .001.

Table 4. Positive affect in young adulthood predicted by covariates and timing of first sexual experiences

| | Study 1 (1996) | | | | | | Study 2 (2005) | | | | | |
| | Step 1 | | | Step 2 | | | Step 1 | | | Step 2 | | |
	B	SE(B)	β	B	SE(B)	β	B	SE(B)	β	B	SE(B)	β
Age	−.01	.01	−.05*	−.01	.01	−.05	.00	.02	−.00	.00	.02	.01
Gender	−.01	.04	−.00	−.00	.04	−.00	.13	.09	.06	.12	.09	.05
Children	−.06	.05	−.04	−.08	.05	−.04	.13	.10	.05	.10	.10	.04
Region	−.12	.04	−.08**	−.12	.04	−.09**	−.02	.09	−.01	.00	.09	.00
Mother's education[a]	−.02	.03	−.02	−.02	.03	−.02	–	–	–	–	–	–
Father's education[a]	.03	.03	.03	.02	.03	.03	–	–	–	–	–	–
Early adversities[a]	−.00	.02	−.00	−.01	.02	−.01	–	–	–	–	–	–
Parental involvement[a]	.14	.03	.10***	.14	.03	.10***	–	–	–	–	–	–
Early subjective PT[a]	.00	.05	.00	−.01	.05	−.00	–	–	–	–	–	–
Late subjective PT[a]	−.01	.05	−.00	.01	.05	.00	–	–	–	–	–	–
Early physical PT[a]	.02	.05	.01	.01	.05	.01	–	–	–	–	–	–
Late physical PT[a]	−.02	.04	−.02	−.02	.04	−.01	–	–	–	–	–	–
Early sexual timing	–	–	–	.05	.04	.03	–	–	–	.05	.10	.02
Late sexual timing	–	–	–	−.10	.05	−.05*	–	–	–	−.40	.13	−.11**
R^2		.02			.03			.01			.02	

Notes. PT = pubertal timing. [a]Measure available only in Study 1.
*p < .05. **p < .01. ***p < .001.

late sexual timing continued to predict higher depressive symptoms in Study 2 (β = .08, p < .05). No interaction effects between gender and sexual timing were found.

Covariates and Psychosocial Adjustment in Young Adulthood

Various associations between covariates and aspects of psychosocial adjustment were observed. We do not provide a detailed overview here. Instead, the reader is referred to the Tables for an overview. Overall, results were in accordance with prior research (e.g., Nolen-Hoeksema, 2001; Silbereisen, 2005; Strenze, 2007).

Discussion

We showed that both early and late timing of first sexual experiences were linked to lower psychosocial adjustment in young adulthood drawing from two large representative

Table 5. Depressive symptoms in young adulthood predicted by covariates and timing of first sexual experiences

| | Study 1 (1996) | | | | | | Study 2 (2005) | | | | | |
| | Step 1 | | | Step 2 | | | Step 1 | | | Step 2 | | |
	B	SE(B)	β	B	SE(B)	β	B	SE(B)	β	B	SE(B)	β
Age	.00	.00	.01	.00	.00	.01	.01	.02	.02	.01	.02	.02
Gender	.04	.02	.04	.05	.02	.05*	.05	.08	.02	.06	.08	.03
Children	−.02	.03	−.02	−.03	.03	−.02	−.04	.10	−.02	−.04	.10	−.02
Region	.03	.02	.03	.04	.02	.04	.18	.08	.08*	.18	.08	.08*
Mother's education[a]	−.01	.02	−.02	−.01	.02	−.02	–	–	–	–	–	–
Father's education[a]	.02	.03	.04	.02	.02	.03	–	–	–	–	–	–
Early adversities[a]	.01	.01	.02	.01	.01	.01	–	–	–	–	–	–
Parental involvement[a]	−.04	.02	−.05	−.03	.02	−.04	–	–	–	–	–	–
Early subjective PT[a]	.08	.03	.06*	.06	.03	.05*	–	–	–	–	–	–
Late subjective PT[a]	.10	.03	.08**	.11	.03	.09***	–	–	–	–	–	–
Early physical PT[a]	−.03	.03	−.02	−.03	.03	−.02	–	–	–	–	–	–
Late physical PT[a]	−.00	.03	−.00	.00	.03	.00	–	–	–	–	–	–
Early sexual timing	–	–	–	.14	.03	.13***	–	–	–	.21	.09	.09*
Late sexual timing	–	–	–	.04	.03	.03	–	–	–	.29	.12	.09*
R^2		.01			.03			.01			.02	

Notes. PT = pubertal timing. [a]Measure available only in Study 1.
*p < .05. **p < .01. ***p < .001.

cross-sectional German studies launched about one decade apart. The majority of young adults had their first sexual experiences between age 16 and 18. What were the implications of being "off time"?

Early and Late Sexual Timing: Associations With Lower Psychosocial Adjustment

First, early timing of sexual experiences was linked to lower educational attainment in young adulthood. This finding, which is in accordance with longitudinal findings (Magnusson & Trost, 2006; Spriggs & Halpern, 2008b), supports the idea that having sexual experiences early, when many adolescents lack biological, cognitive, and psychosocial maturity (Steinberg, 2008), may interfere with other developmental tasks including education. As educational attainment is linked to many other life outcomes including health (Furnée et al., 2008), this suggests a potential for long-term vulnerability. Late sexual timing, in contrast, was not linked to lower educational attainment.

Second, late timing of sexual experiences was linked to poorer social relations in young adulthood indicated by a lower likelihood to have a romantic partner and a true friend. Thus, late sexual timing was associated with possibly lower satisfaction of the "need to belong" (Baumeister & Leary, 1995) converging with previous findings, which show that late sexual timing is associated with poor peer relations (Bingham & Crockett, 1996). Given the cross-sectional design of the studies, it is possible that poorer social relations existed before (and were even responsible) for late sexual timing or that late sexual timing led to difficulties with finding a romantic partner or true friend later on – or that both explanations hold as a cumulative risk model would

suggest (Belsky et al., 1991). In any case, this finding demonstrated maladjustment associated with late sexual timing in a domain where the early timing group did not have difficulties.

Third, both early and late timing of sexual experiences were linked to lower subjective well-being. Thus, being off time, whether early or late, was linked to lower adjustment on the subjective level. Early sexual timing was linked to higher depressive symptoms converging with previous research (e.g., Longmore et al., 2004; Martin et al., 2005) whereas late sexual timing was associated with lower positive affect (and higher depressive symptoms in Study 2). Few researchers would debate that depressive symptoms are undesirable. Yet, attenuations in positive affect should not be underestimated (see Fredrickson, 2001; Lyubomirsky et al., 2005).

Results were controlled for a wide range of covariates including sociodemographic characteristics as well as early antecedents. Although the cross-sectional study design warrants caution, the correlations between early antecedents and sexual timing converge with Belsky et al.'s (1991) theory linking childhood experiences and sexual behavior (Belsky et al., 2010). Specifically, early sexual timing was associated with early adversities, low parental involvement in childhood, and early pubertal timing. Yet, the timing of sexual experiences had an effect over and above the covariates including early antecedents, in accordance with the cumulative risk model by Belsky et al. (1991).

Finally, the findings were replicated across two studies launched about one decade apart, which supports their robustness across cohorts. As noted in the latest review, few studies on adolescent sexual behavior have been replicated (Zimmer-Gembeck & Helfand, 2008). We found that the mean age of first sexual experiences dropped over half a year from 1996 to 2005 converging with historical trends

toward increasing leniency in sexual attitudes and behavior among younger cohorts (Wells & Twenge, 2005). Consequently, the early sexual timing group was a bit larger in 2005 – but not large enough to justify a modified cut-off age. Yet, findings were largely replicated across the two studies. Thus, the timing of sexual experiences continues to matter for psychosocial adjustment in younger cohorts.

In sum, the present studies showed that both early as well as late sexual timing were associated with lower psychosocial adjustment in selected domains in young adulthood. These findings converge with predictions by the motivational theory of lifespan development, which proposes that engaging in developmental tasks (too) early or (too) late may be linked to lower psychosocial adjustment (Heckhausen et al., 2010). Windows of opportunity for engaging in developmental tasks wax and wane across the lifespan; and the factors that shape them range from biological, cognitive, and psychosocial to socionormative influences. Not only the motivational theory of lifespan development emphasizes the importance of timing. Similar ideas, although not referring to the timing of sexual experiences, have been put forth by sociological approaches (e.g., Settersten, 2009) as well as the founder generation of lifespan developmental theorists (e.g., Havighurst, 1976). Previous research has predominantly focused on the link between early sexual timing and lower psychosocial adjustment (Zimmer-Gembeck & Helfand, 2008). However, associations between sexual timing and adjustment are not necessarily linear. Converging with a growing body of empirical evidence (e.g., Sandfort et al., 2008), the present findings show that late sexual timing can be associated with lower adjustment, too, characterized perhaps not so much by a presence of negative but a lack of positive aspects (cf. Seligman & Csikszentmihalyi, 2000).

Limitations and Implications for Future Research

The present studies have limitations. First, following the example of other studies (Martin et al., 2005; Sandfort et al., 2008), we analyzed data from two large representative studies, which allowed for detecting the small timing effects (cf. Spriggs & Halpern, 2008b). However, the cross-sectional study designs do not allow for directional or causal conclusions. It is possible that differences in psychosocial adjustment existed before (and were even responsible) for the timing of sexual experiences. However, this limitation does not challenge our main conclusion that associations between sexual timing and psychosocial adjustment are not necessarily linear.

Second, we examined the timing of "first sexual experiences" (cf. Meschke & Silbereisen, 1997), which we conceive as an indicator of the end of sexual abstinence following the definition of various abstinence programs (Santelli et al., 2006). The use of this measure was dictated by necessity and its lack of specificity remains a limitation as sexual experiences may encompass a variety of sexual experiences with a partner (cf. Prinstein, Meade, & Cohen, 2003).

Yet, some hints indicate that participants might have interpreted sexual experiences as referring to rather advanced sexual behaviors with a partner, possibly even sexual intercourse. First, the mean ages of first sexual experiences found in the present studies were similar to or even higher than mean ages reported for first sexual intercourse in the US and in Germany (cf. Meschke & Silbereisen, 1997; Wells & Twenge, 2005; Zimmer-Gembeck & Helfand, 2008). A second hint comes from US studies showing that young adults agreed that sexual intercourse counted as "having sex" whereas about 60% did not even classify oral sex as "having sex" (Gute et al., 2008; Sanders & Reinisch, 1999). Assuming that German young adults hold similar conceptions, this suggests that participants were thinking of rather advanced sexual behaviors (i.e., intercourse) when reporting on their first sexual experiences. However, a more specific measure of sexual experiences would have certainly been desirable.

Third, we used a retrospective measure of sexual timing. While many studies use retrospective measures of sexual timing (Zimmer-Gembeck & Helfand, 2008), the time interval in the present studies was larger than in most previous studies (but see Sandfort et al., 2008). Retrospective reports can be reliable when referring to specific events (Rutter, Maughan, Pickles, & Simonoff, 1998), particularly during adolescence (Conway, Wang, Hanyu, & Haque, 2005). However, studies have repeatedly found inconsistencies regarding retrospective reports of the status and timing of sexual experiences (e.g., Alexander, Somerfield, Ensminger, Johnson, & Kim, 1993; Palen et al., 2008; Upchurch, Lillard, Aneshensel, & Li, 2002). In view of these inconsistencies, Alexander et al. (1993) recommended that "designating an adolescent as early, normative, or late in the onset of sexual intercourse would seem to provide greater accuracy than using a specific year" (p. 467). We followed this approach in the present paper. Importantly, Upchurch et al. (2002) concluded that "although teens may have difficulty providing consistent information regarding their sexual experience, it appears that these reporting problems are largely random and that they have little impact on the substantive conclusions" (p. 205). Note also that we used a retrospective assessment of pubertal timing. Yet, research indicates that retrospective self-reports may reflect reliable and valid individual differences in pubertal timing (Gilger, Geary, & Eisele, 1991). Moreover, we focused on age at growth spurt, which appears to be an especially relevant indicator of physical pubertal timing (Petersen et al., 1988). However, as there are various additional indicators of physical maturation (e.g., Petersen et al., 1988), we need to note the exclusive reliance on this particular indicator as another limitation. Note that when we repeated the analyses without this measure, all results remained stable (see below). On a side note, in the present studies, age was assessed in full years, and a more precise measurement would have been desirable.

Fourth, further measurement limitations need to be noted. The measures were assessed by self-report and they were not fully comparable across studies. Study 2 included only a subset of covariates available in Study 1; and not all dependent measures were the same across studies (i.e.,

having a true friend, positive affect, depressive symptoms). Ideally, we would have wished for completely comparable measures. However, the data sets that were available to us included only partly comparable measures. Faced with the decision to either drop one of the studies entirely or to accept some measurement incomparability, we decided for the latter option as we believe that replication is important for empirical research. We acknowledge that it is possible that the measurement incomparabilities led to some erroneous conclusions and took several remedies to address this concern. First, we repeated the analyses for Study 1 including only covariates also available in Study 2 and found that the results remained entirely stable.[1] Second, the measure of having a true friend was only available in Study 1 and the results for this measure hence could not be replicated in Study 2. However, findings regarding partnership status, the other measure of social relations, were replicated. Moreover, although the particular measures for positive affect and depressive symptoms were not the same across studies, they were all designed to assess the same constructs. Thus, the fact that the results could be replicated across different measures of the same construct might not only be seen as a weakness but also as a strength of the present studies. In addition, we would like to point out that a number of measures were not available such as the context and quality of first sexual experiences, and other variables associated with late sexual timing including high parental control. It is also important to note that our self-report measure of having a "true friend" did not reveal anything about the reciprocity of the friendship (e.g., Brendgen, Little, & Krappmann, 2000), which would have been better assessed with peer nominations. Some of these measurement shortcomings might have contributed to the rather small effect sizes.

Finally, the results are based on two studies from Germany and call for investigations in other countries. Sandfort et al. (2008) showed that early and late timing of sexual experiences were associated with lower adjustment (i.e., poorer sexual health) in the US. This finding suggests that late sexual timing may also be associated with lower adjustment in other countries and underscores the need for further research.

Taken together, these limitations emphasize the need for further research, ideally prospective, using improved measures including a more specific measure of sexual experiences, assessing moderator variables, studying other aspects of psychosocial adjustment, and examining other countries. In view of the few empirical studies, more research is particularly needed to understand maladaptive correlates of late sexual timing. Longitudinal studies will be crucial to examine both consequences of late sexual timing for future adjustment as well as its developmental antecedents. Overcontrolling parents or an overcontrolled personality (cf. Shedler & Block, 1990) come to mind as possible candidates for the latter.

Conclusion

Previous research and public policy has often equated later timing of sexual experiences with higher psychosocial adjustment. The resulting "problem focus" on adolescent sexuality has received substantial criticism (e.g., Diamond & Savin-Williams, 2009; Sandfort et al., 2008; Santelli et al., 2006). We showed that late sexual timing carried its own adjustment risks regarding social relations and well-being. These findings contribute to a growing body of research on maladaptive correlates of late sexual timing (e.g., Sandfort et al., 2008); and we should add that not only delaying or abstaining from sexual activity but also other forms of "problem behavior" in adolescence may be linked to lower adjustment (Shedler & Block, 1990).

The effect sizes we and others (Spriggs & Halpern, 2008b) have found are not large. Thus, being "off time" is by no means disastrous. Yet, even very small effect sizes can have tremendous practical implications (Rosenthal, 1990). This appears to be certainly true if one considers the public policy efforts to promote sexual abstinence among adolescents in the US and other countries, which appear to not even have the intended effects as studies have repeatedly shown (Kirby, 2008; Santelli et al., 2006).

In sum, we showed that not only early but also late timing of sexual experiences was associated with lower psychosocial adjustment in young adulthood. Before formulating implications for applications, more research is needed. In view of the widespread problem focus on adolescent sexuality in scientific research and the public policy efforts to promote sexual abstinence among adolescents, we hope to encourage a more balanced view of adolescent sexuality.

Acknowledgments

References

Alexander, C. S., Somerfield, M. R., Ensminger, M. E., Johnson, K. E., & Kim, Y. J. (1993). Consistency of adolescents' self-report of sexual behavior in a longitudinal study. *Journal of Youth and Adolescence, 22*, 455–471. doi: 10.1007/bf01537710

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[1] When repeating the analyses for Study 1 including only covariates also available in Study 2 (i.e., age, gender, children, and region), the results remained entirely stable. Early sexual timing predicted lower educational attainment ($\beta = -.07$, $p < .01$); late sexual timing predicted a lower likelihood to have a romantic partner ($Exp(B) = .64$, $p < .01$) and a true friend ($Exp(B) = .56$, $p < .001$); late sexual timing predicted lower positive affect ($\beta = -.06$, $p < .05$); and early sexual timing predicted higher depressive symptoms ($\beta = .13$, $p < .001$).

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497–529. doi: 10.1037/0033-2909.117.3.497

Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62*, 647–670. doi: 10.2307/1131166

Belsky, J., Steinberg, L., Houts, R. M., & Halpern-Felsher, B. L. (2010). The development of reproductive strategy in females: Early maternal harshness –> earlier menarche –> increased sexual risk taking. *Developmental Psychology, 46*, 120–128. doi: 10.1037/a0015549

Bingham, C. R., & Crockett, L. J. (1996). Longitudinal adjustment patterns of boys and girls experiencing early, middle, and late sexual intercourse. *Developmental Psychology, 32*, 647–658. doi: 10.1037/0012-1649.32.4.647

Blinn-Pike, L., Berger, T. J., Hewett, J., & Oleson, J. (2004). Sexually abstinent adolescents: An 18-month follow-up. *Journal of Adolescent Research, 19*, 495–511. doi: 10.1177/0743558403259987

Brendgen, M., Little, T. D., & Krappmann, L. (2000). Rejected children and their friends: A shared evaluation of friendship quality? *Merrill-Palmer Quarterly, 46*, 45–70.

Brugha, T., Bebbington, P., Tennant, C., & Hurry, J. (1985). The list of threatening experiences: A subset of 12 life event categories with considerable long-term contextual threat. *Psychological Medicine, 15*, 189–194. doi: 10.1017/S003329170002105X

BZgA. (2010). *Jugendsexualität 2010* [Youth sexuality 2010]. Köln, Germany: BZgA.

Capaldi, D. M., Crosby, L., & Stoolmiller, M. (1996). Predicting the timing of first sexual intercourse for at-risk adolescent males. *Child Development, 67*, 344–359. doi: 10.2307/1131818

Conway, M. A., Wang, Q., Hanyu, K., & Haque, S. (2005). A cross-cultural investigation of autobiographical memory: On the universality and cultural variation of the reminiscence bump. *Journal of Cross-Cultural Psychology, 36*, 739–749. doi: 10.1177/0022022105280512

Derogatis, L. R. (1993). *BSI: Administration, scoring, and procedures for the Brief Symptom Inventory* (3rd ed.). Minneapolis, MN: National Computer Systems.

Deutsche Shell,. (2002). *50 Jahre Shell Jugendstudie* [50 years Shell Youth Studies]. Berlin, Germany: Ullstein.

Diamond, L. M., & Savin-Williams, R. C. (2009). Adolescent sexuality. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., pp. 479–523). New York, NY: Wiley.

Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist, 55*, 34–43. doi: 10.1037/0003-066X.55.1.34

Dubas, J. S., Graber, J. A., & Petersen, A. C. (1991). A longitudinal investigation of adolescents' changing perceptions of pubertal timing. *Developmental Psychology, 27*, 580–586. doi: 10.1037/0012-1649.27.4.580

Egloff, B., Schmukle, S. C., Burns, L. R., Kohlmann, C.-W., & Hock, M. (2003). Facets of dynamic positive affect: Differentiating joy, interest, and activation in the Positive and Negative Affect Schedule (PANAS). *Journal of Personality and Social Psychology, 85*, 528–540. doi: 10.1037/0022-3514.85.3.528

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218–226. doi: 10.1037/0003-066X.56.3.218

Furnée, C. A., Groot, W., & van den Brink, H. M. (2008). The health effects of education: A meta-analysis. *European Journal of Public Health, 18*, 417–421. doi: 10.1093/eurpub/ckn028

Gilger, J. W., Geary, D. C., & Eisele, L. M. (1991). Reliability and validity of retrospective self-reports of the age of pubertal onset using twin, sibling, and college student data. *Adolescence, 26*, 41–53.

Gute, G., Eshbaugh, E. M., & Wiersma, J. (2008). Sex for you, but not for me: Discontinuity in undergraduate emerging adults' definitions of "having sex". *Journal of Sex Research, 45*, 329–337. doi: 10.1080/00224490802398332

Haase, C. M., Silbereisen, R. K., & Reitzle, M. (2008). Adolescents' transitions to behavioral autonomy after German unification. *Journal of Adolescence, 31*, 337–353. doi: 10.1016/j.adolescence.2007.06.004

Haase, C. M., Tomasik, M. J., & Silbereisen, R. K. (2008). Premature behavioral autonomy: Correlates in late adolescence and young adulthood. *European Psychologist, 13*, 255–266. doi: 10.1027/1016-9040.13.4.255

Havighurst, R. J. (1976). *Developmental tasks and education* (3rd ed.). New York, NY: David McKay.

Heckhausen, J. (1999). *Developmental regulation in adulthood: Age-normative and sociostructural constraints as adaptive challenges*. New York, NY: Cambridge University Press.

Heckhausen, J., Wrosch, C., & Fleeson, W. (2001). Developmental regulation before and after a developmental deadline: The sample case of "biological clock" for childbearing. *Psychology and Aging, 16*, 400–413. doi: 10.1037/0882-7974.16.3.400

Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of lifespan development. *Psychological Review, 117*, 32–60. doi: 10.1037/a0017668

Henry, G. T. (1990). *Practical sampling*. Thousand Oaks, CA: Sage.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science, 241*, 540–545. doi: 10.1126/science.3399889

Kirby, D. B. (2008). The impact of abstinence and comprehensive sex and STD/HIV education programs on adolescent sexual behavior. *Sexuality Research & Social Policy, 5*, 18–27. doi: 10.1525/srsp.2008.5.3.18

Longmore, M. A., Manning, W. D., Giordano, P. C., & Rudolph, J. L. (2004). Self-esteem, depressive symptoms, and adolescents' sexual onset. *Social Psychology Quarterly, 67*, 279–295. doi: 10.1177/019027250406700304

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*, 803–855. doi: 10.1037/0033-2909.131.6.803

Magnusson, C., & Trost, K. (2006). Girls experiencing sexual intercourse early: Could it play a part in reproductive health in middle adulthood? *Journal of Psychosomatic Obstetrics & Gynecology, 27*, 237–244. doi: 10.1080/01674820600869006

Martin, A., Ruchkin, V., Caminis, A., Vermeiren, R., Henrich, C. C., & Schwab-Stone, M. (2005). Early to bed: A study of adaptation among sexually active urban adolescent girls younger than age sixteen. *Journal of the American Academy of Child & Adolescent Psychiatry, 44*, 358–367. doi: 10.1097/01.chi.0000153226.26850.fd

Meschke, L. L., & Silbereisen, R. K. (1997). The influence of puberty, family processes, and leisure activities on the timing of first sexual experience. *Journal of Adolescence, 20*, 403–418. doi: 10.1006/jado.1997.0096

Meschke, L. L., Zweig, J. M., Barber, B. L., & Eccles, J. S. (2000). Demographic, biological, psychological, and social predictors of the timing of first intercourse. *Journal of Research on Adolescence, 10*, 315–338. doi: 10.1207/sjra1003_5

Neugarten, B. L., & Neugarten, D. A. (1996). *The meanings of age: Selected papers of Bernice L Neugarten*. Chicago, IL: University of Chicago Press.

Nolen-Hoeksema, S. (2001). Gender differences in depression. *Current Directions in Psychological Science, 10*, 173–176. doi: 10.1111/1467-8721.00142

Palen, L.-A., Smith, E. A., Caldwell, L. L., Flisher, A. J., Wegner, L., & Vergnani, T. (2008). Inconsistent reports of sexual intercourse among South African high school students. *Journal of Adolescent Health, 42*, 221–227. doi: 10.1016/j.jadohealth.2007.08.024

Petersen, A. C., Crockett, L., Richards, M., & Boxer, A. (1988). A self-report measure of pubertal status: Reliability, validity, and initial norms. *Journal of Youth and Adolescence, 17*, 117–133. doi: 10.1007/BF01537962

Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin, 131*, 925–971. doi: 10.1037/0033-2909.131.6.925

Prinstein, M. J., Meade, C. S., & Cohen, G. L. (2003). Adolescent oral sex, peer popularity, and perceptions of best friends's sexual behavior. *Journal of Pediatric Psychology, 28*, 243–249. doi: 10.1093/jpepsy/jsg012

Radloff, L. S. (1991). The use of the Center for Epidemiologic Studies Depression Scale in adolescents and young adults. *Journal of Youth and Adolescence, 20*, 149–166. doi: 10.1007/BF01537606

Rosenthal, R. (1990). How are we doing in soft psychology? *American Psychologist, 45*, 775–777. doi: 10.1037/0003-066x.45.6.775

Rutter, M., Maughan, B., Pickles, A., & Simonoff, E. (1998). Retrospective recall recalled. In R. B. Cairns, L. R. Bergman, & J. Kagan (Eds.), *Methods and models for studying the individual* (pp. 219–243). Thousand Oaks, CA: Sage.

Sanders, S. A., & Reinisch, J. M. (1999). Would you say you "had sex" if…? *JAMA, 281*, 275–277. doi: 10.1001/jama.281.3.275

Sandfort, T. G. M., Orr, M., Hirsch, J. S., & Santelli, J. (2008). Long-term health correlates of timing of sexual debut: Results from a national US study. *American Journal of Public Health, 98*, 155–161. doi: 10.2105/AJPH.2006.097444

Santelli, J., Ott, M. A., Lyon, M., Rogers, J., Summers, D., & Schleifer, R. (2006). Abstinence and abstinence-only education: A review of U.S. policies and programs. *Journal of Adolescent Health, 38*, 72–81. doi: 10.1016/j.jadohealth.2005.10.006

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5–14. doi: 10.1037/0003-066X.55.1.5

Settersten, R. (2009). It takes two to tango: The (un)easy dance between life-course sociology and life-span psychology. *Advances in Life Course Research, 14*, 74–81. doi: 10.1016/j.alcr.2009.05.002

Shedler, J., & Block, J. (1990). Adolescent drug use and psychological health: A longitudinal inquiry. *American Psychologist, 45*, 612–630. doi: 10.1037/0003-066X.455.612

Sheehan, T. J., Fifield, J., Reisine, S., & Tennen, H. (1995). The measurement structure of the Center for Epidemiologic Studies Depression Scale. *Journal of Personality Assessment, 64*, 507–521. doi: 10.1207/s15327752jpa6403_9

Silbereisen, R. K. (2005). Social change and human development: Experiences from German unification. *International Journal of Behavioral Development, 29*, 2–13. doi: 10.1080/01650250444000478

Silbereisen, R. K. & Pinquart, M. (Eds.). (2008). *Individuum und sozialer Wandel* [Individuals facing social change]. Weinheim, Germany: Juventa.

Silbereisen, R. K. & Zinnecker, J. (Eds.). (1999). *Entwicklung im sozialen Wandel* [Development in times of social change]. Weinheim, Germany: Psychologie Verlags Union.

Spriggs, A. L., & Halpern, C. T. (2008a). Sexual debut timing and depressive symptoms in emerging adulthood. *Journal of Youth and Adolescence, 37*, 1085–1096. doi: 10.1007/s10964-008-9303-x

Spriggs, A. L., & Halpern, C. T. (2008b). Timing of sexual debut and initiation of postsecondary education by early adulthood. *Perspectives on Sexual and Reproductive Health, 40*, 152–161. doi: 10.1363/4015208

Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review, 28*, 78–106. doi: 10.1016/j.dr.2007.08.002

Strenze, T. (2007). Intelligence and socioeconomic success: A meta-analytic review of longitudinal research. *Intelligence, 35*, 401–426. doi: 10.1016/j.intell.2006.09.004

Upchurch, D. M., Lillard, L. A., Aneshensel, C. S., & Li, N. F. (2002). Inconsistencies in reporting the occurrence and timing of first intercourse among adolescents. *Journal of Sex Research, 39*, 197–206. doi: 10.1080/00224490209552142

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070. doi: 10.1037/0022-3514.54.6.1063

Weichold, K., Silbereisen, R. K., & Schmitt-Rodermund, E. (2003). Short-term and long-term consequences of early versus late physical maturation in adolescents. In C. Hayward (Ed.), *Gender differences at puberty* (pp. 241–276). New York, NY: Cambridge University Press.

Wells, B. E., & Twenge, J. M. (2005). Changes in young people's sexual behavior and attitudes, 1943–1999: A cross-temporal meta-analysis. *Review of General Psychology, 9*, 249–261. doi: 10.1037/1089-2680.9.3.249

Wrosch, C., & Heckhausen, J. (1999). Control processes before and after passing a developmental deadline: Activation and deactivation of intimate relationship goals. *Journal of Personality and Social Psychology, 77*, 415–427. doi: 10.1037/0022-3514.77.2.415

Zimmer-Gembeck, M. J., & Helfand, M. (2008). Ten years of longitudinal research on US adolescent sexual behavior: Developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. *Developmental Review, 28*, 153–224. doi: 10.1016/j.dr.2007.06.001

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