**Adolescents' Mate Search in the Digital Age:
Insights from a Mobile Diary Study**

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Introduction

Forming romantic relationships is a pivotal task of adolescent development that not only

establishes a foundation for adult emotional attachments but also is associated with emotional

health and wellbeing (Giordano 2003; Davila 2008; Steinberg and Davila 2008; Joyner & Udry

2000). That early research about teen romance either trivialized partnering behavior as

transitory or emphasized risk behaviors, such as unprotected intercourse, pregnancy and

childbearing, deflected attention from the enduring aspects of adolescents' emotional

attachments (Harden 2014; Collins 2003; Giordano 2003). A substantial interdisciplinary

literature has since established links between teen partnerships and various positive and

negative developmental outcomes, including physical health, self-esteem, identity

crystallization, depression, sexual self-exploration, and adult relationship quality, among others

(Collins 2003; Collins Welsh and Furman 2009).

Most of the "second generation" insights about the developmental salience of adolescent

romance were based on prominent longitudinal youth studies initiated before the proliferation

of multi-use digital technology and social media platforms altered the context within which

adolescents communicate, make friends, and form romantic relationships.[1] By 2015 over 90

percent of adolescents from low-income backgrounds had regular Internet access, and

approximately two-thirds of teenagers owned smartphones (Odgers 2018; Rideout et al. 2015).

The latter development popularized "texting" as a preferred communication vehicle (Coyne et al

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[1] The major youth studies include the Toledo Adolescent Relationship Study, the National Longitudinal Study of Youth 97, and The National Longitudinal Study of Adolescent to Adult Health (Add Health).

2017), which teenagers use both for maintaining friendship connections and establishing romantic relationships (Lenhart et al. 2015). Equally important for appreciating whether and how the emergence and evolution of adolescent romantic relationships takes place in the digital age is the expansion of social media sites, such as Facebook, Twitter and Snap Chat, that multiply opportunities for social connections among friends, as well as apps like *OkCupid* and *Tinder*, that that are designed to facilitate partner search (Coyne et al. 2017; Lenhart et al. 2015; Rosenfeld and Thomas 2012).

Both developments have fueled adult anxieties about the content that teens consume online and the risks associated with unsupervised use of digital media (Lenhart 2005; Valkenburg and Peter 2011). For example, highly publicized reports of teen "sexting" command public attention when harm is disclosed (Ahern and Mechling 2013), yet parental vigilance of adolescents' online behavior appears to depend on parenting style (Chou and Lee 2017; Ihmeideh and Shawareb 2014; Eastin et al. 2006; Wang et al. 2005) as well as parents' digital proficiency (Rideout et al. 2015; Hargittai 2010). Several studies reveal large gaps between teens' and parents' reports of Internet monitoring behavior (Lenhart 2005; Wang et al. 2005), and none to our knowledge links internet monitoring and parenting styles with adolescents finding mates online.

Recent survey evidence about adolescents' uses of social media in romantic relationships provides rich detail about teens' use digital technology and social media to flirt, to maintain existing relationships, and to a much lesser extent to dissolve partnerships (e.g., Lenhart et al. 2015). Estimates of the share of teen relationships formed online differ because of variation in research designs. A study across several sexual health clinics in Florida reports that 15 percent of adolescents met a partner online (Blunt-Vinti et al. 2016); however, this estimate is likely to be biased downward because these partnerships also involved sexual relations. Reports about teenagers use of technology prepared by the Pew Research Center (Lenhart, 2005; Madden, et al. 2013; Lenhart et al. 2015; Anderson and Jiang 2018) provide national estimates of teens'

engagement with various digital media, including for partner search. Based on a nationally representative, stratified probability sample of teenagers ages 13 to 17 in 2014, Lenhart et al. (2015) report that 35 percent of adolescents had ever dated, hooked up with or been romantically involved with another person and that about one-quarter of daters met their partner online.

Based on a nationally representative survey of adults, Rosenfeld and Thomas (2012) argue that the Internet not only has become a socially important venue for partner search, especially for singles facing "thin" mating markets, but also potentially displaced traditional matching venues, such as schools, churches, family and friends. They find that internet coupling is associated with partner heterogeneity along gender, racial and religious lines and that partnerships formed online are comparable in quality to those formed through in-person meetings. Whether similar findings obtain for youth is unclear because nationally representative studies of how teens use technology in romantic relationships provide few systematic comparisons between relationships formed online vs. other venues (Lenhart et al. 2015).

Studies of adolescents' media use that select on problem behaviors such as depression, STDs, and loneliness face challenges of internal and external validity (Valkenburg & Peter 2010; Pittman & Reich 2016; Buhi et al. 2012; Blunt-Vinti et al. 2016), and like the Pew Surveys, seldom systematically compare relationships formed in virtual vs. physical space. Furthermore, none of the population existing studies portray the dynamism of adolescents' partnering behavior (Goldberg et al. 2018) nor reveal the social circumstances that influence *which* teens rely on digital platforms versus other social venues to meet romantic mates.

To address these gaps, this study uses intensive longitudinal data from the *mDiary* Study of Adolescent Relationships (mDiary) linked to six waves of birth cohort data from the Fragile Families and Child Wellbeing Study (FFCWS) (1) to investigate where teenagers meet their mates, and specifically which teen attributes are associated with partnering online; (2) to assess

how relationships formed online differ from those formed in person (e.g., in duration, continuity, quality, age and ethnic congruence, and relationship type); and (3) to identify the correlates of adolescent partnering venues, including whether parenting style and internet monitoring behavior is associated with the odds of partnering online.

Data and Analyses

This study uses data from the *mDiary* Study of Adolescent Relationships, which was designed to examine the romantic relationships of a subset of youth who participated in the Fragile Families and Child Wellbeing Study (FFCWS) since birth. The FFCWS is a population-based birth cohort study that sampled births in 20 medium-to-large U.S. cities; births to unmarried mothers were oversampled (Reichman et al. 2001). Parents and primary caregivers were interviewed over six waves, most recently when the youth were approximately age 15. The FFCWS provides rich background information about childhood and early adolescence family and school environments, including various measures of childhood adversity and parenting strategies that are associated with teens' partnering behavior (Goldberg et al. 2017).

Importantly, both parents and focal youth were interviewed in the Year-9 and Year-15 waves, which included questions about Internet access and parent monitoring behaviors. Eligibility for the *mDiary* Study of Adolescent Romantic Relationships was restricted to teens who completed the Year-15 FFCWS interview by March 2016, and resided in one of the 15 cities approved by the parent study. Of the 1343 teens who met the eligibility criteria, 689 assented to participate in the *mDiary* study, and were invited by text or email to complete the first of 26 short surveys over the course of 52 weeks. Our analyses of teens partnering behavior are based on teens' responses to the *mDiary* surveys, which have been linked to the rich survey data reported by teens and parents over the prior six waves.

The bi-weekly mini-surveys, which traced adolescent partnerships as well as indicators of emotional wellbeing and household shocks (i.e. parent job loss, deportation, divorce, etc.), were administered via a mobile-optimized web app linked to the Qualtrics web survey platform; most respondents (86%) completed the surveys using smartphones. The survey platform permitted automated linking of responses between surveys to enable follow-up on previously identified partners. Tracking partnerships in this way was essential to gauge relationship persistence and variation in quality over time.

Table 1 compares the FFCWS Year-15 sampling universe with the *mDiary* respondents. Compared with the FFCWS sampling universe, *mDiary* respondents hail from slightly more advantaged backgrounds (higher shares of college-educated mothers). Just under one-third of *mDiary* respondents are white compared with about one-quarter of the eligible universe, and girls were slightly over represented (54.8% vs. 48.4%) relative to the FFCWS sampling universe. The modal age of *mDiary* respondents was 16 compared with 15 for the FFCWS universe, approximating the time interval separating the two surveys.

Table 1 About Here

Nearly 70 percent of mDiary respondents reported having ever dated by age 15 compared with 73 percent of the sampling universe, and virtually all (94 percent) had regular Internet access at home (compared with 91 percent of the FFCWS universe). These modest differences partly reflect the positive socioeconomic selection of mDiary respondents relative to the eligible universe. Nevertheless, there were no differences in phone internet access between youth in the sampling universe and the mDiary respondents, which is an important consideration given the pervasive use of mobile and digital technology in the initiation and maintenance of romantic relationships (Lenhart et al. 2015; Anderson and Jiang 2018). In fact, national reports about

teens' Internet access reveal modest variation by race and socioeconomic status, with the highest overall rates of Internet access correspond to Non-Hispanic White teens (Madden 2013). As costs of mobile plans decline, the digital proficiency has overtaken social class as a key axis of the digital divide (Hargittai 2010; Zillien & Hargittai 2009).

Background and Preliminary Tabulations

One of line of research about the risks and opportunities afforded by digital technology focuses on whether and how parents regulate adolescents' online behavior. The evidence is inconsistent because of differences in parents' and teens' (partly perception based) reports about whether monitoring occurs (Lenhart 2005); because of variation in parents' experiences, usage, and attitudes toward the Internet (which are strongly correlated with their propensity to monitor their children's Internet usage (Valcke 2010); and because of differences in parenting strategies styles. Wang et al. (2005), for example, find that 61 percent of parents reported imposing Internet time restrictions or checking web history, but only 38 percent of teens concurred with their parents. Discordant parent-teen perceptions may also reflect differences in the primary locus for Internet monitoring: home vs. other venues and/or mobile devices.

Prior studies that examine how parents monitor their children online consider four parenting styles—authoritative, authoritarian, permissive, and neglectful—that represent variations in strictness and levels of involvement (Eastin 2006; Ozgur 2016; Valcke 2010). Authoritative and authoritarian parents are stricter than the average parent, but authoritative are more involved in their children's lives than authoritarian parents. Eastin (2006) reports that authoritative parents tend to discuss and evaluate their child's online behavior more than authoritarian, permissive, or neglectful parents. Permissive parents combine less strict rule-

setting with high levels of involvement in their children's activities while neglectful parents are less strict and less involved in their children's lives than the average parent.

Based on a nationally representative sample of U.S. parents with children ages 12 to 17, Wang et al. (2005) reported that parents who use the Internet with their children also tend to impose time restrictions, check web histories, and use monitoring software to a greater extent than less involved parents. Their findings suggest that stricter and more involved parents are more likely to monitor their youth online than permissive parents and those less involved with their children's activities. Both authoritative and authoritarian parents impose Internet time restrictions to a greater extent than either permissive or neglectful parents, but authoritative parents tend to impose online content restrictions to a greater extent than permissive or uninvolved parents (Eastin 2006). Children of authoritative parents also report spending less time on the Internet for leisure purposes than children of permissive, neglectful or authoritarian parents (Chou and Lee 2017). On average, both authoritative and authoritarian parents report using technology to monitor and block their children to a greater extent than permissive and neglectful parents (Eastin 2006).

Table 2 reports preliminary tabulations based on the merged mDiary and FFCWS data. The monitoring indicator is derived from the baseline *mDiary* survey based on teens' reports; home Internet access is provided by parents at Year-15; and time spent online for nonacademic purposes is provided by teens at the Year-15 interview. Each *mDiary* survey queried respondents whether they were talking to, flirting with, dating or hooking up with anyone. Affirmative responses were followed with a battery of questions about the partner, including where the first meeting occurred. Internet/social media was one of the response options.

Table 2 About Here

A large plurality of teens avoids Internet surfing on weekdays, although there is some evidence that monitored youth are somewhat less inclined to spend time surfing the Web on weekdays compared with their unmonitored counterparts. About 14 percent of unmonitored youth spend over 3 hours per weekday shopping or visiting websites, compared with about 5 percent of their monitored counterparts. Yet, there are no differences in the share of youth who report having met one or more romantic partners online. Approximately one-in-five youth reported having met one or more partners online, which is slightly below the 25 percent share among "daters" reported by Lenhart et al. (2015). Partly these differences reflect the narrower age-range of the *mDiary* participants coupled with the larger sample share of ever daters. Roughly two-thirds of *mDiary* respondents reported having ever dated by age 15 (Table 1), compared with one-third of the PEW respondents; by the conclusion of the *mDiary* study, fully 88 percent of teenagers had one or more romantic relationships.[2]

Table 3 provides additional context for interpreting the online partnering behavior of *mDiary* teens by comparing the distribution of partnering venues. Not surprisingly, given the age of the *mDiary* participants, schools remain the dominant arena where adolescents meet their romantic partners. Yet, consistent with Rosenfeld and Thomas (2012) findings for adults, it appears that Internet is also becoming an important social intermediary for teenagers' mate search. Whether tabular results are restricted to relationships (over half of youth had two or more relationships) or teens who reported only one relationship in the course of the *mDiary* study, the Internet is now the second most prominent venue where adolescents' search for romance. Whether this is a salutary development depends on the nature (dating or casual friends with benefits) and quality of the relationships (based on caring, symmetrical attachment, and conflict)

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[2] See Table 2: 466/531 = 88%.

and whether youth who sort into unhealthy partnerships—whether on- or offline—differ

systematically from those who form salutary romantic relationships Odgers 2018; George et al.

2018) and will also evaluate whether and how parenting styles and supervision moderate the

risks youth face in cyber mating venues.

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Table 1
Sample Characteristics: Sampling Universe and mDiary Enrollees
(percentages)

Background	mDiary Enrollees n=531	FF Youth Sampling Universe n=1343
Mother's race/ethnicity*		
White	31.6	26.1
Black	35.4	41.7
Hispanic	28.6	28.1
Other	4.1	4.0
Missing	0.2	0.2
Mother's completed education at baseline*		
Less than high school	23.5	29.3
High school	27.9	31.7
Some college	31.5	26.6
College or graduate	17.1	12.4
Mother married to father at baseline*	34.1	27.4
Respondent characteristics		
Female*	54.8	48.4
Ever dated at Year-15*	68.7	73.4
Has home internet access*	93.8	90.6
Has phone internet access	90.6	89.5

Source: FFCWS Baseline and Year-15 parent survey

*Statistically different between FFCWS sampling universe and mDiary participants.

Table 2
Internet Access and Online Partnering by Parents Monitoring Behavior
(percentages)

	Parent does NOT monitor teen Internet (n=352)	Parent monitors teen Internet (n=179)	Total (n=531)
Daily weekday hours visiting websites/shopping online			
0	43.8	50.8	46.1
1	30.7	33.0	31.5
2	10.5	8.9	10.0
3	6.5	2.2	5.1
4+	7.4	4.5	6.4
Don't know	1.1	0.6	0.9
Met one or more partners online*	19.8	20.2	20.0
(N)*	(308)	(158)	(466)

Source: FFCWS Year-15 Parent Survey and mDiary Baseline Survey
*Reported 1 or more relationships in surveys 2-26

Table 3
Adolescent Partnering Arenas:
Distribution of Places Where mDiary Participants Met Their Partners
(percentages)

	All Relationships (n=679)	Teens with One Relationship (n=180)	Teens with 2+ Relationships (n=499)
School	57.1	63.3	54.9
Internet	15.5	13.3	16.2
Friends	9.0	8.9	9.0
Extra-Curricular Activities	5.6	3.3	6.4
Party/Neighborhood	5.7	3.9	6.4
Place of Worship	2.4	2.8	2.2
Work	2.9	2.2	3.2
Other/Refuse/Don't Know	1.8	2.2	1.6
Total	100.0	100.0	100.0

Source: *mDiary* Study surveys 2-26