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Where birds flock to get together: The who, what, where, and why of mate searching ☆

Peter K. Jonason [a,*], Joshua D. Foster [b], Jessica McCain [c], W. Keith Campbell [c]

[a] University of Western Sydney, Australia
[b] University of South Alabama, United States
[c] University of Georgia, United States

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ABSTRACT

An understudied area of personality psychology is how personality traits might facilitate structuring of one's environment toward goals like mating. In four studies ($N = 1325$), we examined (1) self-reports of where individuals go to find long-term and short-term mates, (2) how personality traits are associated with the use of these locations, and (3) how the sexes differ in their selection of mate search locations. Men were more likely than women were to use short-term (e.g., bars) than long-term (e.g., community events) niches, but did not differ in success in those niches and agreed on the nature of those niches. Slow life history traits, conscientiousness and agreeableness, were linked to preferences for long-term niches whereas, fast life history traits, narcissism and dishonesty, were linked to preferences for short-term mating niches.

1. Introduction

Personality traits may influence who people choose as mates (Buss, 1984, 1987; Jonason, Valentine, Li, & Harbeson, 2011), but does it merely structure mate preferences or does it play a role in mate searching? Mate preferences are what people desire in their partners but mate searching involves the active selection of environments that may or may not facilitate mating. Mate searching plays a central role in reproduction in non-human species (Calabuig, Ortego, Cordero, & Aparicio, 2008; Clarke, Henzi, Barrett, & Rendall, 2008; Hoffman, Forcada, Trathan, & Amos, 2007; Kahlenberg, Thompson, Muller, & Wrangham, 2008; for a critique, see Kotiaho, Lebas, Puurtinen, & Tomkins, 2008), but has generally been ignored by psychologists. In this study, we examine individual differences in where individuals go to find mates and their self-reported success in those ventures.

First, we try to describe the niches people use to find mates consistent with recent work attempting to document how people describe their environments (Rauthmann et al., in press; Sherman, Nave, & Funder, 2010, 2012, 2013). One important manner by which individuals describe their environment is in relation to the availability of mates. However, prior work did not make the distinction between finding sexual partners and romantic partners. We contend this distinction will be seen in the types of niches individuals choose to find mates because (1) certain niches are composed of features (e.g., low light; Dutton & Aron, 1974; Foster, Witcher, Campbell, & Green, 1998; Gergen, Gergen, & Barton, 1973) that may overtly facilitate short-term sexual encounters whereas others may make sex an afterthought and (2) certain niches may shape mate selection on primarily short-term (e.g., physical attractiveness; Kenrick, Sadalla, Groth, & Trost, 1990; Li & Kenrick, 2006) or long-term criteria (e.g., personality traits; Jonason, Li, & Madson, 2012; Li, Bailey, Kenrick, & Linsenmeier, 2002) because of the traits that are valued in those contexts. Therefore, we expect there to be two primary dimensions of mating niches, short-term and long-term.

Second, we try to account for individual differences in the use and success at these niches with personality traits. The different features that characterize each niche may make them more or less appealing to individuals leading to individual differences in who uses/likes a given niche. Importantly, Life History Theory suggests individuals allocate their time and energy to fitness relevant goals and personality traits may be expressions of biases toward a fast or slow way of life. Fast life strategists are characterized by all manner of socially undesirable or "dark" traits; traits like the Dark Triad. Those high on these traits engage in short-term matings

☆ Participants and two measures in Study 2 were also used in Jonason and McCain (2012) for alternative purposes. The authors thank Emma Richardson and Ryne Sherman for reviewing this paper prior to submission

* Corresponding author at: School of Social Sciences and Psychology, University of Western Sydney, Milperra, NSW 2214, Australia.
E-mail address: p.jonason@uws.edu.au (P.K. Jonason).

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(Jonason, Li, Webster, & Schmitt, 2009) and may not be well-suited for long-term relationships (Jonason, Li, & Buss, 2010). Part of the complex that is called a fast life history strategy may be a tendency to pursue short-term mating opportunities and, therefore, to exploit those niches that are most likely to pay off. For instance, the narcissist would find his mating efforts thwarted at every turn if he went to the museum in hopes of a quick score. In contrast, slow life strategists are characterized by various socially desirable and "light" traits like conscientiousness. These people prefer long-term matings and have generally cautious approach to life. Those characterized by different manifestations of a slow life history strategy may prefer quite different niches, niches that may serve long-term mating goals.[1]

Given apparent sex differences in mating strategies (Buss & Schmitt, 1993; Eagly, 1987), we expect the sexes to diverge in how likely they are to use various niches to find short- or long-term partners. Given men's greater pursuit, interest, and willingness to engage in casual sex (Clark & Hatfield, 1989), it is likely men will be more willing than women are to use a wide assortment of locations to find short-term mates. However, the sexes are thought to differ only where they have faced recurrent and different adaptive challenges and thus sex differences are likely confined—in the case of mating psychology—to short-term relationships where women pay a higher cost for bad choices than men do (Buss & Schmitt, 1993; Jonason, Valentine, & Li, 2012; Li & Kenrick, 2006). In addition, the evolutionary model of sex differences only predicts underlying dispositions that orient men and women toward one way of acting or thinking where relevant (i.e., creates a system of biases). It makes sense the sexes would understand each niche whether they used it or not (Sherman et al., 2012, 2013) and evolved sex differences in mating psychology are often more about psychological dispositions than actual behavior. Therefore, we predict the sexes will agree on the types of locations one would choose for finding long-term and short-term mates and few sex differences in self-reported success at finding mates at various locations.

There is considerable research on various aspects of mating psychology (Jonason & Li, 2013; Kenrick et al., 1990; Simpson & Gangestad, 1991). However, before any of these elaborate systems for reproduction can be exercised, one must find a mate. This aspect of mating psychology has generally been neglected in studies with humans but not as much with non-human animals (Calabuig et al., 2008; Clarke et al., 2008; Hoffman et al., 2007; Kahlenberg et al., 2008; Kotiaho et al., 2008). In four studies we examine (self-reports of) where individuals go to find mates, how personality traits relate to preferences to different niches, and sex differences in those preferences. We contend that personality traits encourage individuals to select particular mating environments that align with their mating orientation.

2. Study 1: identifying mating niches

We begin by determining what are the primary places individuals use to find mates. We then compare men and women on the degree to which they use the different locations to find short-term and long-term mates. This study will provide some basic details about how a series of potential niches are used for mating purposes. It acts as a necessary first step to understand the manner by which personality traits might facilitate the active creation of mating niches, not merely to document where college students go to find sexual or romantic partners.

2.1. Method

2.1.1. Participants and procedure

One hundred students (70% female) from the University of South Alabama, aged 18–38 (M = 23.58, SD = 4.98), completed a survey in their class in Personality Psychology in exchange for extra credit. Fifty-two percent were single; 48% were in a serious romantic relationship.[2] The (first and third) authors created (*ad hoc*) a measure of 50 ostensible niches individuals might use to find short-term and/or long-term mates (available upon request). Participants were asked how much (1 = *not at all*; 5 = *very much*) they felt each niche characterized a place where they might go to find either a short-term (i.e., casual sex partners) or long-term (i.e., serious relationship partner) mate, if they were looking for said relationship type. Thus, participants rated each niche twice: once for short-term mating and once for long-term mating.

2.2. Results and discussion

The Top 10 short- and long-term niches for men, women, and the overall sample can be seen in Table 1. There was strong agreement between the sexes as to the kinds of niches used for short- and long-term mating. Indeed, sex-comparisons of the 100 niches (50 places, each assessed in terms of short- and long-term mating) revealed only six statistically significant differences, which is approximately what one would expect to find by chance alone when using an alpha of .05.[3] Specifically, men (vs. women) rated Conventions (both short-term: $t(98) = 2.22$, $p < .05$, Cohen's $d = 0.81$; and long-term: $t(98) = 2.60$, $p < .05$, $d = 0.95$), Bookstores (long-term: $t(98) = 2.13$, $p < .05$, $d = 0.78$), Laundromats (long-term: $t(98) = 3.44$, $p < .01$, $d = 1.28$) and Clients at Work (both short-term: $t(98) = 3.42$, $p < .01$, $d = 1.25$; and long-term: $t(98) = 2.50$, $p < .05$, $d = 0.91$) as places to find mates.[4] It appears, based on this analysis, that men and women possess similar conceptualizations of short- and long-term mating niches.

To verify that participants were distinguishing between short- and long-term mating when evaluating the niches, we next conducted a series of paired t-tests across mating duration with an alpha of .01. Class, special interest groups, religious events, work, the gym, coffee shops, volunteering, neighborhoods, conferences, parks, the beach, weddings, conventions, bookstores, clients, singles events, and the library received significantly higher ratings for long-term mating ($ts = -3.84$ to -13.68, $ps < .001$, $ds = -0.10$ to -0.72) whereas bars, nightclubs, and dance clubs received significantly higher ratings for short-term mating ($ts = 4.64$–5.79, $ps < .001$, $ds = 0.14$–0.19). This analysis confirmed that some niches were seen by participants as more appropriate for short-term mating while others were seen as being more appropriate for long-term mating.[5]

3. Study 2: individual differences and mating niches

The results of Study 1 identified the primary niches men and women use to find short- and long-term mates. However, Study 1 suffers from some limitations. First, it had a small sample. Second, it relied on item analyses which are considered less than

[1] We make no specific predictions regarding particular traits, and, instead, wish to say something larger about niche specialization as expressed by fast and slow life histories.

[2] Results were invariant across relationship-status.

[3] We are, of course, assuming these are independent which may not be the case making it even more likely there are no sex differences in these data.

[4] Here, and throughout the study, effect sizes were calculated at http://www.uccs.edu/~lbecker/.

[5] For reportorial economy we summarize our results here. The particular effects are not what matter, merely that people are distinguishing the niches on the short-term/long-term distinction. The interested reader is directed to contact the first author for more details.

Table 1
Overall, by sex, and by mating duration Top 10 niches used to find mates.

	Mean (SD)			
Overall (N = 100)				
	Long-Term		Short-Term	
1	Class	3.36 (1.22)	Bar	3.36 (1.51)
2	Organizations	3.24 (1.28)	Nightclub	3.36 (1.65)
3	Religious	3.18 (1.55)	Party	3.34 (1.41)
4	Work	3.06 (1.30)	Dance Club	3.27 (1.64)
5	Gym	2.82 (1.21)	Beach	3.21 (1.47)
6	Coffee shop	2.82 (1.84)	Wedding	2.81 (1.40)
7	Volunteer groups	2.78 (1.21)	Gym	2.73 (1.42)
8	Neighborhood	2.76 (1.06)	Concert	2.67 (1.22)
9	Conferences	2.76 (1.23)	Fraternity party	2.59 (1.66)
10	Park	2.73 (1.31)	Neighborhood	2.52 (1.28)
Men (n = 30)				
1	Work	3.60 (1.43)	Nightclub	4.10 (1.27)
2	Coffee shop	3.40 (1.07)	Bar	3.70 (1.34)
3	Class	3.30 (1.34)	Dance Club	3.70 (1.42)
4	Conference	3.20 (1.40)	Party	3.60 (1.17)
5	Organizations	3.20 (1.48)	Beach	3.40 (1.26)
6	Gym	3.20 (1.03)	Wedding	3.30 (1.57)
7	Convention	3.20 (0.92)	Mixers	3.10 (1.60)
8	Bookstore	3.10 (1.20)	Concerts	3.00 (1.15)
9	Party	3.00 (0.82)	Neighborhoods	2.90 (1.52)
10	Customers	3.00 (1.41)	Fraternity party	2.90 (1.73)
Women (n = 70)				
1	Class	3.39 (1.20)	Party	3.23 (1.51)
2	Religious	3.30 (1.46)	Bar	3.22 (1.59)
3	Organizations	3.26 (1.21)	Beach	3.13 (1.58)
4	Work	2.83 (1.19)	Dance Club	3.09 (1.73)
5	Volunteer groups	2.74 (1.25)	Nightclub	3.04 (1.72)
6	Library	2.74 (1.42)	Gym	2.65 (1.50)
7	Neighborhood	2.70 (1.15)	Wedding	2.59 (1.30)
8	Gym	2.65 (1.27)	Concert	2.52 (1.24)
9	Park	2.61 (1.31)	Fraternity party	2.45 (1.65)
10	Conference	2.57 (1.12)	Neighborhood	2.35 (1.15)

ideal relative to ones based on multi-item composites. Third, it only examined one possible individual difference (i.e., participant's sex) that might allow us to understand the types of people who use various niches. Therefore, in Study 2 we re-assess the mating niches but do so with three items per niche in a larger sample while re-testing sex differences and examining the links between niche-specialization and two measures of personality.

3.1. Method

3.1.1. Participants and procedure

Five hundred and forty-four students (69% female) from the University of South Alabama, aged 17–50 (M = 20.25, SD = 4.70), completed an online survey as part of their introductory psychology class. Sixty-four percent of the sample labeled themselves as European American, 24% labeled themselves as African American, and 12% labeled themselves as some other ethnic/racial classification.[6] Participants logged into an online survey management system. They were informed of the nature of the study and were asked if they consented to participate. If they said "yes," they proceeded through a number of personality measures including those used in this study. Upon completion, participants were thanked and debriefed.

The Dirty Dozen (Jonason & Webster, 2010) measure of the Dark Triad was used. Participants were asked how much they agreed (1 = *not at all*; 5 = *very much*) with statements such as: "I tend to want others to admire me" (i.e., narcissism), "I tend to lack remorse" (i.e., psychopathy), and "I have used deceit or lied to get my way" (i.e., Machiavellianism). Items were averaged together to create a composite of narcissism (Cronbach's α = .79), Machiavellianism (α = .80), and psychopathy (α = .74).[7]

The 60-item HEXACO-PI-R (Ashton & Lee, 2009) measure of personality was used. It measures six different factors of personality including honesty/humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness along with four facets of each factor. Participants were asked their agreement (1 = *strongly disagree*; 5 = *strongly agree*) with the statements. For instance, as an indicator of the honesty/humility factor participants reported agreement with the item: "I'd be tempted to use counterfeit money, if I were sure I could get away with it." The corresponding items were averaged to create a composite of the six factors of honesty/humility (α = .71), emotionality (α = .78), extraversion (α = .82), agreeableness (α = .72), conscientiousness (α = .79), and openness (α = .69).[8]

Because mate searching could simply be driven by mating orientation, we wanted to control for sociosexuality. We measured sociosexuality with the Tripartite Sociosexual Orientation Inventory (Jackson & Kirkpatrick, 2007) which is a revised version of the original SOI (Simpson & Gangestad, 1991). There are two subscales: short-term mating orientation (α = .93) and long-term mating orientation (α = .75). Participants were asked their agreement (1 = *strongly disagree*; 7 = *strongly agree*) with 20 statements.[9]

We culled the total number of niches under investigation by taking those in Study 1 that were significantly (as per one sample t-tests) endorsed in Study 1 leaving us with 23 niches (presented in random order; presented in Appendix A).[10] For each niche (e.g., party, work), participants answered six questions designed to assess the extent to which they used the different niches for short-term (three questions) and long-term mating purposes (three questions). The questions used to assess short- and long-term niche usage were nearly identical: (1) How likely are you to use this location to find a short-term [long-term] relationship? (2) How often have you had sex with [dated] someone you met at this place? (3) When it comes to meeting new short-term [long-term] mates how comfortable do you feel with using this place? Participants responded to the questions using a five-point scale (1 = *not at all*; 5 = *very much*). We averaged responses to the three questions for each niche within each mating duration because all returned good-to-high rates of internal consistency (αs = .82–.91).

3.2. Results and discussion

As 23 niches is still excessive (in our opinion), we only present the results with the Top 10 niches in each mating duration (Table 2) and we decreased alpha to .01. Machiavellianism and psychopathy were each associated with mate-searching in five short-term and at least one long-term location (Table 3). Similarly, honest–humility was associated with the use of various niches for short-term mating and negatively to the use of long-term niches (Table 4).

A Short-Term Mating Orientation was correlated with use of all the short-term mating niches (rs = .19–.50, ps < .01) and a Long-Term Mating Orientation was uncorrelated with the use of all long-term mating niches (rs = –.07 to .13).[11] We controlled for the variance associated with respective mating orientation, for

[6] No meaningful patterns were detected along this distinction.

[7] Narcissism was correlated with psychopathy (r(542) = .40, p < .01) and Machiavellianism (r(542) = .56, p < .01). Psychopathy was correlated with Machiavellianism (r(542) = .61, p < .01).

[8] The HEXACO traits were positively correlated (rs = .11 to .34, ps < .01).

[9] Long-term mating orientation was correlated with short-term mating orientation (r(539) = -.37, p < .01). We did not use "previous mating behavior" in this study.

[10] This was done to reduce participant fatigue and to only assess "important" niches but the full list is available upon request.

[11] More detail available upon request.

Table 2
Descriptive statistics and sex differences for the Top 10 niches across mating context.

		M (*SD*)			*t*	*d*
		Overall (*N* = 544)	Men (*n* = 169)	Women (*n* = 375)		
Short-term mates						
1.	Class (.82)	2.26 (1.16)	2.61 (1.24)	2.10 (1.08)	4.61**	0.44
2.	Party (.87)	2.14 (1.20)	2.51 (1.30)	1.96 (1.11)	4.75**	0.46
3.	Beach (.83)	2.10 (1.13)	2.45 (1.22)	1.93 (1.05)	4.75**	0.46
4.	Fraternity party (.88)	1.98 (1.18)	2.22 (1.28)	1.87 (1.13)	3.09	0.29
5.	Neighbor (.85)	1.97 (1.05)	2.26 (1.15)	1.82 (0.97)	4.30**	0.41
6.	Gym (.83)	1.95 (1.06)	2.20 (1.16)	1.83 (1.00)	3.62*	0.34
7.	Wedding (.83)	1.86 (1.03)	2.03 (1.10)	1.78 (0.99)	2.49	0.24
8.	Special interest (.83)	1.85 (1.00)	2.12 (1.06)	1.72 (0.95)	4.17**	0.40
9.	Volunteer (.83)	1.84 (1.02)	2.05 (1.10)	1.73 (0.96)	3.21	0.31
10.	Coffee (.82)	1.83 (0.98)	2.10 (1.10)	1.70 (0.90)	4.02*	0.40
Long-term mates						
1.	Class (.88)	2.86 (1.25)	3.00 (1.26)	2.80 (1.23)	1.72	0.16
2.	Religious (.87)	2.71 (1.38)	2.45 (1.33)	2.83 (1.38)	−3.04	0.28
3.	Neighbor (.87)	2.37 (1.14)	2.50 (1.20)	2.31 (1.12)	1.74	0.16
4.	Special interest (.83)	2.31 (1.11)	2.43 (1.14)	2.26 (1.10)	1.69	0.15
5.	Volunteer (.80)	2.31 (1.12)	2.30 (1.13)	2.30 (1.11)	−0.03	0.00
6.	Beach (.84)	2.24 (1.11)	2.41 (1.11)	2.16 (1.11)	2.39	0.23
7.	Gym (.83)	2.15 (1.08)	2.26 (1.16)	2.10 (1.04)	1.58	0.15
8.	Wedding (.80)	2.14 (1.07)	2.19 (1.13)	2.11 (1.05)	0.74	0.07
9.	Coffee (.83)	2.114 (1.06)	2.23 (1.08)	2.09 (1.04)	1.43	0.13
10.	Park (.84)	2.13 (1.06)	2.27 (1.07)	2.06 (1.05)	2.05	0.20

Note. Values in parentheses are Cronbach's αs for internal consistency.
* $p < .01$.
** $p < .001$.

consistency. The correlations generally remained even after controlling for shared variance between mating orientation and personality. Taken together, the HEXACO accounted for on average 3% (*Range* $\Delta R^2 = .02–.04$) and the Dark Triad traits accounted for 2% (*Range* $\Delta R^2 = .01–.02$) more variance in the adoption of different short-term niches when short-term mating orientation was entered in Step 1 in a hierarchical multiple regression. The HEXACO accounted for on average 4% (*Range* $\Delta R^2 = .01–.10$) and the Dark Triad traits accounted for 3% (*Range* $\Delta R^2 = .00–.06$) more variance in the adoption of different long-term niches when long-term mating orientation was entered in Step 1 in a hierarchical multiple regression. While this is only a modest contribution above mating strategy, 55% of the tests were significant at the .01 level. Even a small relationship, over time, could result in fitness gains despite the downsides linked to traits like narcissism (Holtzman & Strube, 2011).

4. Study 3

The prior studies are limited in their exploratory nature and particular personality inventories. The reliance on the Dirty Dozen may be contentious and may be responsible for our lack of findings with narcissism despite the central role it plays in short-term mating (Campbell & Foster, 2002; Campbell, Foster, & Finkel, 2002; Foster, Shrira, & Campbell, 2006; Holtzman & Strube, 2011; Jonason, Luévano, & Adams, 2012). Therefore, in Study 3 we replicate and extend the details from above to address these limitations. Importantly, we hope to better detail individual differences in people's choices in mate searching locations.

Table 3
Betas (from multiple regressions controlling for the overlap among the personality traits) between the Dark Triad traits and the use of different niches to find short- and long-term mates both with and without controlling for respective mating strategies (*N* = 544).

		Narcissism	Psychopathy	Machiavellianism
Short-term mates				
1.	Class	.02 (−.04)	.18** (.06)	.16** (.15*)
2.	Party	.11 (.02)	.11 (−.06)	.13* (.11*)
3.	Beach	.15 (.08)	.07 (−.08)	.06 (.05)
4.	Fraternity party	.14 (.08)	.08 (−.05)	.12 (.11)
5.	Neighborhood	.03 (−.03)	.12 (.01)	.15* (.14*)
6.	Gym	.03 (−.03)	.17* (.05)	.14* (.12*)
7.	Wedding	.07 (.02)	.17** (.06)	.07 (.06)
8.	Special interest	−.03 (−.07)	.19** (.10)	.16* (.15*)
9.	Volunteering	.11 (.07)	.08 (.00)	.08 (.07)
10.	Coffee shop	.00 (−.05)	.16* (.06)	.12 (.11)
Long-term mates				
1.	Class	−.08 (−.08)	.05 (.08)	.25** (.24**)
2.	Religious event	.02 (.02)	−.08 (−.03)	.05 (.04)
3.	Neighborhood	−.06 (−.06)	.11 (.08)	.09 (.10)
4.	Special interest	−.10 (−.10)	.11 (.09)	.20** (.21**)
5.	Volunteering	.01 (.01)	.03 (.03)	.11 (.11)
6.	Beach	.06 (.06)	.07 (.03)	.03 (.05)
7.	Gym	.08 (.08)	.05 (.02)	.09 (.10)
8.	Wedding	.00 (.00)	.16* (.13)	.08 (.09)
9.	Coffee shop	−.07 (−.08)	.11 (.07)	.11 (.12)
10.	Park	−.02 (−.02)	.09 (.06)	.15* (.15*)

Note. Regression coefficients in parentheses reflect associations when mating orientation is controlled for in Step 1 of the regression.
* $p < .01$.
** $p < .001$.

4.1. Method

4.1.1. Participants and procedure

The sample was composed of 209 University of South Alabama undergraduates (35% male), aged 17–56 years old ($M = 20.63$, $SD = 4.06$), who were given partial course credit for their completion of a series of measures online. Seventy percent of the sample identified as "White/Caucasian."

4.1.2. Dark Triad measures

The Dirty Dozen (Jonason & Webster, 2010) measure of the Dark Triad was used again. Participants were again asked their agreement (1 = *strongly disagree*; 5 = *strongly agree*) with a series of statements. Items were summed to create a composite of narcissism (Cronbach's $\alpha = .71$), Machiavellianism ($\alpha = .80$), and psychopathy ($\alpha = .75$).

Narcissism was also assessed with the 40-item Narcissistic Personality Inventory (Raskin & Terry, 1988). For each item, participants chose one of two statements that they felt applied to them more. One statement reflected a narcissistic attitude (e.g., "I have a natural talent for influencing people"), whereas the other did not (e.g., "I am not good at influencing people"). We summed the total number of narcissistic statements the participants endorsed to measure overall narcissism ($\alpha = .88$).

The Levenson's Self-Report Psychopathy Scale (Levenson, Kiehl, & Fitzpatrick, 1995) was also used to measure psychopathy. Participants were asked their agreement (1 = *strongly disagree*;

Table 4
Betas (from multiple regressions controlling for the overlap among the personality traits) between the HEXACO traits and the use of different niches to find short- and long-term mates both with and without controlling for respective mating strategies (N = 544).

	H	E	X	A	C	O
Short-term niches						
1. Class	−.32** (−.20**)	−.11 (.02)	.08 (.06)	.04 (.04)	−.06 (.00)	−.02 (−.05)
2. Party	−.28** (−.11*)	−.17** (.00)	.15* (.12*)	−.01 (−.00)	−.07 (.01)	−.02 (−.06)
3. Beach	−.27** (−.14**)	−.20** (−.06)	.13* (.10)	−.01 (−.00)	−.01 (−.06)	−.04 (−.07)
4. Fraternity party	−.21** (−.06)	−.09 (.05)	.12 (.10)	.03 (.03)	−.10 (−.03)	−.09 (−.13**)
5. Neighborhood	−.25**(−.13*)	−.12* (−.00)	.04 (.03)	.03 (.04)	−.05 (.00)	−.04 (−.06)
6. Gym	−.25** (−.13*)	−.17** (−.06)	.07 (.07)	.08 (.08)	−.04 (.02)	−.06 (−.09)
7. Wedding	−.28** (−.17**)	−.11 (−.07*)	.05 (−.00)	.06 (.07)	−.03 (.03)	−.05 (−.08)
8. Special interest	−.23** (−.15*)	−.12* (−.03)	.01 (−.01)	.03 (.03)	−.01 (.03)	.05 (.03)
9. Volunteering	−.25** (−.18**)	−.12* (−.04)	−.02 (−.04)	.06 (.06)	−.03 (.01)	−.01 (−.03)
10. Coffee shop	−.23** (−.12*)	−.08 (.03)	−.02 (−.04)	−.04 (−.04)	−.02 (.04)	.08 (.06)
Long-term niches						
1. Class	−.17** (−.18**)	−.01 (−.02)	.12 (.12*)	.01 (.01)	.04 (.03)	.02 (.02)
2. Religious event	.06 (.05)	.05 (.01)	.08 (.06)	.07 (.07)	.04 (.02)	−.16** (−.16**)
3. Neighborhood	−.07 (−.06)	−.07 (−.04)	.05 (.06)	−.00 (−.00)	.02 (.03)	−.03 (−.02)
4. Special interest	−.09 (−.08)	−.03 (−.01)	.05 (.06)	−.01 (−.01)	.01 (.03)	.06 (.06)
5. Volunteering	−.05 (−.05)	−.04 (−.04)	.01 (.01)	−.03 (−.03)	.03 (.03)	.02 (.02)
6. Beach	−.19** (−.17**)	−.14* (−.11*)	.13* (.14*)	−.03 (−.03)	.02 (.03)	−.05 (−.04)
7. Gym	−.13* (−.12*)	−.14* (−.12*)	.11 (.12*)	.06 (.06)	−.05 (−.05)	−.08 (−.07)
8. Wedding	−.16** (−.16**)	−.04 (−.01)	.11 (.13*)	.02 (.02)	−.09 (−.07)	−.06 (−.06)
9. Coffee shop	−.09 (−.08)	−.04 (−.01)	.03 (.05)	−.09 (−.09)	.00 (.03)	.09 (.10)
10. Park	−.12* (−.12*)	−.13 (−.12*)	.03 (.05)	.03 (.03)	−.01 (−.01)	.05 (.05)

Note: H = honesty/humility; E = emotionality; X = extraversion; A = agreeableness; C = conscientiousness; O = openness. Regression coefficients in parentheses reflect associations when mating orientation is controlled for in Step 1 of the regression.
* $p < .01$.
** $p < .001$.

5 = *strongly agree*) with statements like "I often admire a really clever scam." Items were summed to create a single index of psychopathic personality (α = .82).[12]

To assess the Big Five personality dimensions, we used the Big Five Inventory, a cross-culturally validated instrument (Benet-Martinez & John, 1998). Participants reported their agreement (1 = *strongly disagree*; 5 = *strongly agree*) with 44 statements. Each of the five personality dimensions were measured with summed items for extraversion (α = .81), neuroticism (α = .83), openness (α = .76), conscientiousness (α = .67), and agreeableness (α = .81).

Global self-esteem was measured with the 10-item Rosenberg (1965) Self-Esteem Scale. Participants were asked how much they agreed (1 = *strongly disagree*; 9 = *strongly agree*) with statements like: "I feel that I am person of worth, at least on an equal basis with others." The 10 items were summed to create a composite of self-esteem (α = .92).

Niche-choice was measured with six items. Specifically, participants were presented with a list of six places "where someone might look for a mate (i.e., a boyfriend, girlfriend, spouse, or sex partner) for a short-term or long-term relationship". They were asked to imagine they were in each place and "Rate how likely [1 = *definitely not*; 7 = *definitely*] it is that you would look for a mate in that place." The six places were selected based on results from the previous studies, were meant to reflect short-term (i.e., beach, bar/nightclub, party) and long-term (i.e., class, work, special interest group) niches, and needed to be further culled to reduce participant fatigue as the number of personality traits assessed and the length of the measures has grown. Specifically, each of the short-term and long-term niches appeared on its respective top 10 list (overall) from Study 1 (see Table 1) and did not appear on the opposing top 10 list (e.g., "beach" appeared on the top 10 list of short-term niches, but did not appear on the top 10 list of long-term niches). Additionally, each of the short-term and long-term niches appeared, respectively, on both top 10 sex-specific lists (e.g., "beach" appeared on both the men's and women's top 10 list of short-term niches). With one exception ("party," which appeared on men's long-term and short-term top 10 lists), the niches selected did not appear on opposing sex-specific top 10 lists. We should also note here that in two instances we also merged together niches that were judged to be highly similar. Specifically, we merged bar and nightclub into "bar/nightclub," and we merged organizations and volunteer groups into "Special interest groups."

4.2. Results and discussion

We begin by assessing whether there are two primary dimensions of mating niches that align with evolutionary predictions (Buss & Schmitt, 1993). A confirmatory factor analysis (CFA)[13] was conducted using Mplus (version 7) software (Muthen & Muthen, 2011) and employed maximum likelihood estimation. The two hypothesized latent factors (i.e., short-term and long-term mating niches) were measured by their respective three observed (manifest) items. Model fit was assessed with a combination of incremental (CFI, TLI) and absolute (SRMR) fit indices (Hu & Bentler, 1999; Marsh, Balla, & McDonald, 1988). A fourth commonly reported absolute fit index, RMSEA, was not used because research suggests it is biased in low *df* models (Kenny, Kaniskan, & McCoach, 2015). Based on these indices, our hypothesized two factor model exhibited acceptable fit ($\chi^2(8) = 31.45$; CFI = .95; TLI = .91; SRMR = .06). It is perhaps worth noting that an examination of the modification indices revealed correlated residual variance between two of the short-term niche items (bar/nightclub and party) that weakened model fit. A modified model that contained this correlation improved fit ($\chi^2(7) = 12.36$; CFI = .99; TLI = .98; SRMR = .03). In contrast, a model on which all six observed items loaded onto a

[12] All measures of the Dark Triad traits were correlated (rs = .21–.63, ps < .01).

[13] In a Principal Components Analysis with a promax rotation two components were extracted and together accounted for 72% of the variance. The first component (Eigen value = 2.93; 49% variance) consisted of the three putative long-term niches (factor loadings: class = .89, special interest group = .89, work = .69). The second component (Eigen value = 1.39; 23% variance) consisted of the three putative short-term niches (factor loading: bar/nightclub = .92, party = .92, beach = .71).

Table 5
Associations and betas (from multiple regressions controlling for the overlap between mating context) between personality traits and the adoption of short-term or long-term mating niches (N = 209).

	r (β)	
	Short-term niche	Long-term niche
Narcissism		
Narcissistic Personality Index	.31** (.34**)	.05 (−.07)
Dirty Dozen-Narcissism	.25** (.21*)	.18 (.10)
Psychopathy		
Levenson's Self-Reported Psychopathy	.21* (.29**)	−.11 (−.22*)
Dirty Dozen-Psychopathy	.20* (.21*)	.05 (−.03)
Machiavellianism		
Dirty Dozen-Machiavellianism	.25** (.29**)	−.02 (−.12)
Big Five Personality Inventory		
Extraversion	.17 (.15)	.13 (.08)
Agreeableness	−.01 (−.10)	.21* (.25*)
Conscientiousness	−.00 (−.09)	.21* (.24*)
Neuroticism	−.18* (−.13)	−.17 (−.12)
Openness	.05 (−.04)	.23* (.25*)
Self-esteem		
Rosenberg's Self-Esteem Scale	.03 (−.01)	.11 (.12)

Note. Regression coefficients in parentheses reflect associations when personality traits regressed onto both niches simultaneously. We do not control for the associations within the Dark Triad traits because doing so would essentially cancel any links out.
* $p < .01$.
** $p < .001$.

single latent factor (general mating orientation; note, this model also contained the correlated residual variance between bar/nightclub and party) exhibited poor fit ($\chi^2(8) = 89.74$; CFI = .83; TLI = .69; SRMR = .11). In sum, the results of this CFA further suggest the presence of two mating niches: a short-term niche measures by the items beach, bar/nightclub, and party and a long-term niche measured by the items class, work, and special interest group.

To facilitate subsequent analyses, ratings for the three items for each niche were averaged to create indexes of the degree to which they would search for mates in long-term (α = .76) and short-term (α = .82) niches. Men (M = 4.45, SD = 1.69) used the short-term mating niches more ($t(207) = 4.29$, $p < .01$, $d = 0.60$) than women did (M = 3.49, SD = 1.46), but the sexes did not differ on their likelihood of using the long-term mating niches, consistent with the idea that the sexes are similar in long-term mating contexts but differ in short-term mating contexts (Li & Kenrick, 2006; Li et al., 2002).

In Table 5 we summarize the correlations between measures of personality and use of short-term and long-term mating niches. In addition, because use of the short-term niche and the long-term niche were correlated ($r(207) = .36$, $p < .01$), we also report the standardized regression weights describing the associations between each personality trait and the use of a given mating niche while controlling for the use of the other mating niche. This provides a purer assessment of the association between the personality and use of niches. With regard to Dark Triad traits, the results were unambiguous. The Dark Triad traits consistently predicted increased use of short-term mating niches but not use of long-term mating niches; pattern that held across measures of the Dark Triad traits. Fewer significant associations were observed with regard to Big Five personality traits and self-esteem. In general, however, it appears that agreeableness, conscientiousness, and openness—ostensible slow life history traits—were correlated with using long-term mating niches more. Notably, none of these results were moderated by the sex of the participant. Our results confirm the idea that the Dark Triad traits structure their mating environment to maximize their short-term, not long-term, mating success. Long-term mating success may be best supported by "lighter" personality traits.

5. Study 4

Study 4 focused on self-reported success in mating niches. Success provides additional clarity in regards to the role the Dark Triad traits play in structuring one's mating environment. We focus only on the Dark Triad traits to avoid participant fatigue, the apparent importance of these traits from Study 3, and the known correlations between measures of the Big Five (Jonason & Webster, 2010) and the HEXACO (Jonason & McCain, 2012).

5.1. Method

5.1.1. Participants and procedure

The sample was composed of 472 American participants (56% male), aged 18–72 years old (M = 32.03, SD = 10.11), who were paid US$1 for their completion of a series of measures on MTurk (see Casler, Bickel, & Hackett, 2013). Fifty-nine percent of the sample were involved in a relationship and 41% were single.[14] Ninety percent were heterosexual, 7% were bisexual, and 3% were homosexual.

5.1.2. Measures

The Dark Triad traits were measured with the Short-Dark Triad Scale (Jones & Paulhus, 2014). The measure is composed of 27 items measuring Machiavellianism (e.g., "It's not wise to tell your secrets."), psychopathy (e.g., "Payback needs to be quick and nasty."), and narcissism (e.g., "People see me as a natural leader.") where participants reported their agreement with each statement (1 = *strongly disagree*; 5 = *strongly agree*). Items for each scale were averaged to create measures of Machiavellianism (Cronbach's α = .79), narcissism (α = .79), and psychopathy (α = .80).[15]

The Top 10 list from Study 1 was shrunk by one rule. Items that were on both the short-term and long-term lists (for comparison purposes) were retained, leaving six niches (i.e., coffee shop, gym, class, beach, volunteering, wedding). We asked participants their success at finding short-term and long-term mates at each of these niches (1 = *not at all*; 5 = *very much*).

5.2. Results and discussion

We found only one sex difference with men (M = 1.51, SD = 0.98) reporting more ($t(468) = -2.98$, $p < .01$, $d = -0.28$) success in finding long-term mates at weddings than women did (M = 1.27, SD = 0.71), but given the large number of test we report this tentatively. In Table 6 we report the zero-order correlations and standardized regression coefficients from multiple regressions where the Dark Triad traits were used to predict success rates in the different niches in finding mates. A number of findings jump out. First, the effects seem to be driven largely by narcissism scores and localized to short-term mating consistent with theoretical conceptualizations of narcissism (Campbell & Campbell, 2009). Second, the few significant associations in the long-term mating duration suggest those who are narcissistic may use weddings, class, and the beach to find long-term mates and those high on psychopathy may use weddings to find long-term mates. Third, volunteering, a clearly prosocial niche was not associated with the any of the Dark Triad traits, barring a weak link to narcissism in the short-term.

[14] Results did not differ as a function of relationship status, therefore, results are collapsed across those distinctions.
[15] Psychopathy was correlated with narcissism ($r(470) = .33$, $p < .01$) and Machiavellianism ($r(470) = .49$, $p < .01$) and narcissism was correlated with Machiavellianism ($r(470) = .22$, $p < .01$).

Table 6
Correlations and betas (from multiple regressions controlling for the overlap among the personality traits) between the Dark Triad and success finding a short- (STM) or long-term (LTM) mate at different places ($N = 472$).

	r (β)					
	Machiavellianism		Narcissism		Psychopathy	
	STM	LTM	STM	LTM	STM	LTM
Wedding	.04 (−.01)	.05 (−.06)	.21* (.21**)	.15* (.11)	.08 (.02)	.17* (.16*)
Class	.09 (.04)	.03 (−.02)	.24** (.24**)	.17* (.16*)	.08 (−.02)	.08 (.03)
Beach	.12 (.04)	.11 (.06)	.22* (.18*)	.18* (.16*)	.16* (.08)	.12 (.04)
Gym	.04 (.01)	.06 (−.01)	.20* (.21*)	.11 (.08)	.05 (−.02)	.12 (.09)
Coffee shop	.07 (.00)	.04 (−.02)	.20* (.18*)	.10 (.08)	.13* (.07)	.11 (.10)
Volunteering	.04 (−.01)	−.05 (−.08)	.14* (.13*)	.08 (.09)	.08 (.04)	.02 (.03)

* $p < .01$.
** $p < .001$.

6. General discussion

Finding a suitable mate has serious reproductive and social consequences in people (Gangestad & Simpson, 2000; Jonason & Li, 2013) and in non-human animals (Calabuig et al., 2008; Clarke et al., 2008; Hoffman et al., 2007; Kahlenberg et al., 2008; Kotiaho et al., 2008), but it has been generally neglected among people. The overarching goal of this study was to understand how individuals structure their environment to afford them with the kinds of mating opportunities that they want. If personality traits tap cognitive and behavioral heuristics that are selected to facilitate fitness-relevant outcomes, we would expect them to "encourage" people to select the niche that will provide them with the mating opportunities one wants. If one is characterized by "slow" life history traits like conscientiousness, selection should have equipped these same people with attraction toward those niches that serve their long-term purposes. If one is characterized by "fast" life history traits like psychopathy, selection should pair the trait with biases to prefer fitness relevant niches that provide short-term opportunities. These niches, at least in modern societies, are pre-existing locations that have been design to serve certain markets. For instance, nightclubs provide all the features an exploitive mater would need. The person high on psychopathy can exact only minimal influence on this kind of environment through, perhaps, patronage. Instead, niches are naturally occurring features of the modern environment that individuals select from. What guides this selection are evolutionarily-relevant decision heuristics that characterize slow/light or dark/fast traits.

This study adds to what is known about the relationships between personality and mating psychology and describes the content and structure of where individuals go to find mates. In reference to the former, we showed how those characterized by various traits that fall under the umbrella of a fast or slow life history strategies may align their choice of location for mate searching to coincide with their ideal mating strategy. But what might individuals find in their preferred niche? They are likely to find others with similar dispositions. Biases that facilitate such a pattern could have been selected for because mating with psychologically similar others may expedite the pairing process as both partners are on the proverbial same page, creating assortative mating effects (Kalmijn & Flap, 2001). For instance, as those high in the Dark Triad traits may have a night-time chronotype (Jonason, Jones, & Lyons, 2013) it is (1) no surprise that these people prefer night-time oriented niches but (2) will then want to pair up with those with a similar bias. Nevertheless, we feel the safest conclusion to reach is that "dark" traits in general – whether they be a member of the Dark Triad or dishonesty – matter for short-term mate searching, but the specific shade of darkness is more challenging to predict.

We also provided new detail about the content and structure of mating environments that people choose. Such work complements emerging work on the selection of particular contexts (Rauthmann et al., in press; Sherman et al., 2010, 2012, 2013), but extends this to include physical space as well. We found that the kinds of places individuals chose reflect the long-term/short-term distinction that has shown to be fundamentally important in understanding sex differences in mating psychology (Buss & Schmitt, 1993; Gangestad & Simpson, 2000; Kenrick et al., 1990). This division appears to be based on the perceived functions of the features of each mating context. Short-term contexts tended to provide highly sexualized environments whereas long-term contexts almost treated sex as an afterthought. Each location may act as something of a lek (i.e., a location where individuals go to assess potential mates) where individuals of both sexes can advertise the relevant qualities. In the case of the short-term mating niches, locations (e.g., nightclubs) serve to advertise (and even enhance) an individual's physical attractiveness; a quality highly valued in short-term mating contexts (Li & Kenrick, 2006). In contrast, long-term mating niches appear to advertise socially desirable personality traits (e.g., generosity and compassion) that may be beneficial to the successful engagement in long-term, mutualistic relationships (Li et al., 2002).

Second, we examined potential sex differences in reference to self-reports of use of different mating niches, success in finding mates in various niches, and perceptions of the type of mating each niche serves. In the case of the latter two, we found little evidence of sex differences. Both sexes agreed on whether niches were used for short-term or long-term mating. The sexes did not differ in how successful they were in finding mates in different niches. Instead, men were generally more willing to use the short-term mating niches than women were, which is consistent with the idea that men are more eager than women are to engage in casual sex (Buss & Schmitt, 1993; Clark & Hatfield, 1989). Such a sex differences could be interpreted from either an evolutionary (Buss & Schmitt, 1993; Confer et al., 2010; Jonason et al., 2012) or social role (Eagly & Wood, 1999; Pratto, 1996; Wood & Eagly, 2002) approach. We feel the specificity of our effects are best understood using the *a priori* assumptions provided by evolutionary theory, but cannot rule out sociocultural effects about the relative appropriateness of engaging in casual sex behaviors across the sexes or how our samples of predominantly university students may follow something of a script in reference to where they find mates.

7. Limitations and conclusions

This study was characterized by a number of limitations. First, our list of mate searching niches was author-generated and originally (Study 1, 2, and 3) tested in American students from Alabama, but were chose what we thought were face-valid (i.e., obvious) places people used to find mates. The types of niches people use might be different at different stages of people's lives and as a function of culture. For instance, older people may have a sociometer tuned more toward long-term mating than short-term mating (Penke & Denissen, 2008). Similarly, specific niches like "fraternity parties" may be uniquely American and limited to universities with a Greek Life community. We by no means claim to have provided an exhaustive list of potential niches nor the links between personality and niche-selection; indeed the focus of this paper was not individual niches themselves but how systematic

patterns in niche features relevant to mating may be related to personality traits. We repeatedly culled the niches to avoid laborious item-analyses which will have restricted the scope of our study. Instead, our higher-order goal here was to further extend what is known about how personality traits relate to the structuring of people's mating environments. Second, although we generally adjusted our *p*-values, we may still suffer some Type I error. However, as this study is the first of its kind we feel some error is tolerable. Third, more advanced methodological techniques may provide more convincing tests of our hypotheses—methods like daily diary studies—in as much as retrospective self-reports are limited. For instance, an examination of personality traits of individuals in the actual locations in question would provide a more compelling and direct test than we could provide here. Nevertheless, we asked participants about their behavior and so long as we can trust that, we feel our results do capture individual differences in self-reported success and use of various niches to find mates. Fourth, in the modern world, there are numerous technological advances that enable mate searching (e.g., eHarmony, Tinder, Facebook) which we did not study directly.[16] Fifth, we failed to assess social desirability in the responses. Narcissists may inflate self-reports of their sexual experiences. This potential self-inflation might not be as problematic as it appears at first glance because it suggests narcissists are willing to self-report socially undesirable tendencies despite their tendency to self-enhance (Campbell, Reeder, Sedikides, & Elliot, 2000). Nevertheless, we tried to minimize this problem by constraining responses onto a scale with endpoints as opposed to allowing free responses that might be even more biased (e.g., number of people picked up at X location). Sixth, there was clear variance in our results across studies which is to be expected given the various measures we used to assess personality, especially in relation to the Dark Triad traits. However, we were less concerned with predictions for particular traits and, instead, used those traits as representative of fast and slow life history strategies. As such, the inclusion of various measures creates a finer meshed net to catch the effects we are interested in. And seventh, we may have adopted an overly simplistic model of relationship choice. We confined ourselves to the standard two-dimensional model of long-term and short-term relationships (Buss & Schmitt, 1993) that is considered a fundamental contextual factor in understanding sex differences in mating psychology. However, there is growing evidence suggesting there are many variants of long-term and short-term relationships (Jonason, 2013).

An old song waxes on about "Looking for love in all the wrong places." While we resist any tendency to make such value judgments about what is a "wrong" place, we have provided new detail about the mate searching strategies people employ as a function of mating context, the sex of the participant, and personality traits. We suggest that locations may cater more to certain types of people and are geared toward different mating strategies. People may use these various locations to find like-minded others to facilitate their mating strategy. In other words, we already know that "birds of a feather flock together," and now, we also know where they flock to get together.

Appendix A. The complete list of niches

Class
Special interest event
Religious
Work
Gym
Coffee shop
Volunteer event
Neighborhood
Conference
Park
Bar
Nightclub
Party
Dance
Beach
Wedding
Concert
Fraternity house
Convention
Bookstore
Clients
Singles event
Library

[16] In the items we created in Study 1 to measure niche preferences, we included online locations and they did not score within the Top 10 of niches used.

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