"Shopping" for a Mate: Expected versus Experienced Preferences in Online Mate Choice

—ALISON P. LENTON, BARBARA FASOLO, AND PETER M. TODD

***Abstract*—*Modern communication technology has greatly increased the number of options we can choose among in a variety of evolutionarily important domains, from housing to food to mates. But is this greater choice beneficial? To find out, we ran two experimental studies to examine the effects of increasing option set-size on anticipated and experienced choice perceptions in the modern context of online mate choice. While participants expected greater enjoyment, increased satisfaction, and less regret when choosing from larger (versus smaller) sets of prospective partners (at least up to a point; Study 1), participants presented with a supposedly ideal number of options experienced no improvement in affect and showed more memory confusions regarding their choice than did those participants presented with fewer options (Study 2). Participants correctly anticipated that greater choice would yield increasing costs, but they overestimated the point at which this would occur. We offer an evolutionary-cognitive framework within which to understand this misperception, discuss factors that may make it difficult for decision-makers to correct for it, and suggest ways in which dating websites could be designed to help users choose from large option sets.*

***Index Terms*—*Affective forecasting, choice overload, evolutionary psychology, mate choice, online dating, too-much-choice.*

Modern humans in wealthy parts of the globe face resource options of evolutionarily unprecedented magnitudes. For example, while our ancestors had limited food and habitat choices, we have a surfeit of foodstuffs to choose from, and the freedom to live in a variety of areas. The "problem" of too-much-choice is further magnified when one considers the number of options available on the internet, which has no physical space limitations. For example, a consumer searching for a mountain bike on the internet is likely to be presented with more than 3000 options from which to choose [1]. At the same time, however, our psychology for search on the internet may not be any different from that employed in foraging for food or other resources in the physical world, as suggested by research on information foraging [2], as well as by the framework of evolutionary consumer psychology more broadly [3]–[5]. Thus, since the psychological mechanisms that we employ have not changed while our environment has, along with the decision challenges posed by this technologically-induced glut of choice comes the necessity for information tools to help people deal with them [6].

But perhaps more than in any other evolutionarily important domain, the number of options facing us when choosing a mate has become potentially overwhelming. Not only are there simply more people in our local environment than ever before to select among, but modern methods of dating present us with even more choice than humans have previously had to deal with. And this expanding range of options is readily available for inspection. For example, a typical "speed-dating" event may present singles with as many as 30 potential partners in less than 2 hours [7], and a recent speed-dating event in China comprised as many as 5000 individuals [8]. As in consumer choice, e-communication technology has increased the mate-choice challenge even more: Match.com, the leading dating website, offers "millions of possibilities" [9]. Furthermore, the lack of face-to-face cues (e.g., physical presence or ability to hear others' voices) makes dating websites a less "natural" and potentially more cognitively demanding environment in which to acquire information about prospective mates [10]. Of course, most people do not remain in a state of indecision concerning with whom to partner—95% of Americans have married by the time they reach age 55 [11]—but recent research has indicated that all of this choice may have its downsides.

First, however, consider the benefits of having a great amount of choice: Both consumers and manufacturers believe an abundance of choice is desirable [12], [13]. This presumption has long been

Manuscript received September 22, 2006; revised June 28, 2007.
A. P. Lenton is with the Department of Psychology, University of Edinburgh, Edinburgh EH8 9JZ, Scotland (e-mail: a.lenton@ed.ac.uk).
B. Fasolo is with the Department of Management, Operational Research Group, London School of Economics and Political Science, London WC2A 2AE, UK (e-mail: b.fasolo@lse.ac.uk).
P. M. Todd is with the Cognitive Science Program, Indiana University, Bloomington, IN 47405 USA (e-mail: pmtodd@indiana.edu).
IEEE 10.1109/TPC.2008.2000342

sustained by the idea that the more options there are, the more likely it is that the option chosen will closely match the chooser's preferences [12]; it also has been sustained by research indicating that greater variety brings benefits including enhanced intrinsic motivation [14], alertness, well-being [15], and consumption [16].

Moreover, while it may seem as though it will be difficult for a decision-maker to wade through many options, large option sets do not necessarily pose a problem if choosers possess well-articulated preferences [12]. Chernev's [12] research shows that when people with strong preference structures are faced with a large option set, they are more likely to SATISFICE [17], or choose the first option that is "good enough" along the various criteria that matter to them. As a result, cognitive demand is lowered [17], satisfaction is increased, and regret is attenuated [18].

From an evolutionary standpoint, mate choice is a domain in which choosers possess well-articulated (evolved) preferences regarding the qualities that make for a desirable long-term mate [19], [20]. For example, men and women prefer partners who possess wealth and status, show family commitment, are attractive, and are likely to be faithful [21], [22]. Crucially for the present studies—which are situated in the online dating context—research suggests that the mate qualities that are important to people offline are the same as those that are important to people online [23], [24].

Despite the appeal of more options, the logic of diminishing returns (e.g., the 250th option does not add as much benefit as the 12th) suggests that ever-increasing amounts of choice may not add much. Moreover, given that search costs may continue to rise, additional options may become detrimental; indeed, accumulating evidence suggests that the results of having extensive choice are not altogether positive, as it can also lead to decreased satisfaction with and increased regret about the option selected [25], increased decision complexity, and cognitive load (for those with unarticulated preferences [12]). Thus, more choice may be worse, at least in consumer decision making.

In a widely discussed set of studies, Iyengar and Lepper found evidence that "less is more" in some standard consumer decisions such as the purchase of chocolate [25]. Despite the fact that people are consistently attracted to situations where they have more options, people choosing from among a couple dozen options were more frustrated by the difficulty of their experience, less confident about their choice, and made fewer purchases than those choosing from a half dozen (though see [26] for consideration of limits of this effect). What does this "too-much-choice" effect mean for modern mate choice in the accelerated and amplified online setting? Even if people want a multitude of potential partners to choose from, are they as satisfied as expected when they encounter such wealth of choice? The present studies investigate the degree to which the number of mate options available online influences people's expectations about (see Study 1) and experience of (see Study 2) the choice situation and option selected. Preference for ever more choice should be found in the online mating context, given the similarity in people's behavior between the online and offline worlds in terms of their desired mate preferences (as already described), and in terms of their psychological mechanisms for searching and foraging [2], [27]. We also assess whether men and women want a different number of mates to choose from, as might be implied by sex differences in the number of sexual partners preferred [20]. Based on Chernev's findings regarding the moderating role of well-articulated preferences [12], we expect choosers faced with a relatively large set of potential mates to be at least as content (if not more so) with their selection than choosers faced with a relatively small set of potential mates. In other words, less may not necessarily be more, at least in terms of choosers' affective experiences of selecting a potential mate.

Empirical investigations of the too-much-choice effect to date primarily have been confined to the consumer choice domain. It remains to be seen whether these effects will be found in a more significant domain (both currently and evolutionarily) such as mate choice, where important differences in consequences can arise (e.g., number of successful offspring) from even small differences between options. There is reason to believe that the effect may nevertheless occur in human mate choice, based on evidence from nonhuman mate choice: Hutchinson reviewed research demonstrating the too-much-choice effect in the mating context for animals as diverse as frogs and grouse [28]. For example, while studies show that (female) animals initially prefer greater choice (e.g., they prefer leks—groups of multiple advertising males—to solitary males [29]), they may be confused by it (e.g., as with acoustically

advertising frogs [30], [31]) and their choice quality may diminish (as with grouse [32]).

Furthermore, Dunbar suggests that primates' neocortex evolved during the environment of evolutionary adaptation (EEA), in part, to deal with the size of their respective social networks, which was itself determined by such things as habitat [33]. A consequence of this is that modern primates may not have the cognitive capacity to maintain social networks larger than what their neocortex was designed to deal with. Dunbar's regression modeling strongly supports the proposed relationship between neocortex volume and average group size, with neocortex size accounting for approximately 76% of the variance in average group size across 36 primate species. Within a species, social networks greatly exceeding this optimal level tend to become unstable and eventually collapse, fissioning into smaller groups. Extrapolating from this regression equation, Dunbar theorizes that the average human social network in the EEA may have contained approximately 148 individuals (with the 95% confidence limits between 100 and 231 individuals), a contention supported by a range of ethnographic, historical, and sociological evidence. Consequently, although too-much-choice may not have affective downsides (if the chooser possesses well-articulated preferences), there may still be practical costs (e.g., low quality choice).

How could these two contradictory factors—desire for more choice, but detriments in decision making if too-much-choice is faced—coexist in our evolved minds? While there may be limits on the number of other individuals our minds are prepared to deal with, the desire for more options in mate choice is nevertheless likely to have been adaptive in our evolutionary past. For example, motivation for increasing variety—even within a restricted option set-size—facilitates the avoidance of incest (see [34]), as well as increasing the chance of finding an option above a given threshold, so the wiser among us would have preferred to make our selection of a mate from as wide a sample as possible. (Males in particular have a preference for sexual variety [35].) Importantly for our theorizing, however, in the EEA the desire for more choice could co-exist with our cognitive limitations because human social network sizes rarely reached sizes beyond our capacity. But current developments in e-communication technology have jeopardized this co-existence by expanding the size of the mate choice environment well beyond our processing capacity, and the two factors can come into conflict.

More than 600 million people across the world now have internet access [36], with the vast majority using it to communicate with other people, and doing so to maintain interpersonal relationships [37]. Brym and Lenton [38] argue that the internet constitutes a **society**, with only China and India exceeding it in size. As in any society, mating is a goal possessed by many of the internet's members: nearly 10 out of every 1000 internet users log onto dating websites [39]. Brym and Lenton suggest that there are four main factors underlying the growth in internet (versus "traditional") dating, including (1) an increasing number of singles; (2) increasing career and time pressures; (3) the increasing mobility of individuals; and (4) a decrease in workplace romance (because of fears surrounding sexual harassment complaints). As indicated already, however, dating websites present people with many more options than they would typically encounter in their local communities. And the average dating website user appears to appreciate this variety, as a conservative estimate suggests that they scan over 200 profiles each time they log in [39]. But what are the consequences of this option-rich modern mate choice environment on the individuals venturing into it? This is what we explore in our second study.

Recently, psychologists have begun to investigate mate choice in dating websites, although most of this research concentrates on the decisions that people make (e.g., who people tend to choose and why), rather than focusing—as we do—on subjective perceptions regarding the choice process. The latter is much more likely to differ between online and "real world" dating situations, because, again, what people look for in mates online and offline does not change [23], whereas the choice context **is** unique online. For example, Bargh and McKenna argue that the increased anonymity afforded by the internet leads people to develop closer relationships more quickly, as it facilitates self-expression based on shared interests and values and reduces the potential for physical and nonverbal attraction cues to impede connection [37]. Bargh and McKenna do not consider, however, the effect of one of the most striking features of the internet social environment: the vast number of options one can easily encounter. Thus, the primary purpose of the present research is to examine the effects of such increasing option set-size on anticipated and experienced choice satisfaction in the online dating domain. Again, we anticipated that people will show more positive expectations about larger set-sizes in a monotonically increasing fashion—which we test

in Study 1. And in Study 2, we examine whether a larger (preferred) option set-size yields equivalent (or even increased) satisfaction at the same time it yields evidence for poorer decision making.

STUDY 1: HOW MANY POTENTIAL MATES DO PEOPLE WANT TO CHOOSE FROM?

Method

Participants: Eighty-eight individuals participated in return for £5. These participants were recruited from the University of Cambridge (UK) community and their average age was 22.5. Approximately 58% ($n = 51$) were female, and 89% ($n = 78$) self-reported being exclusively heterosexual (bisexual: $n = 4$; homosexual: $n = 6$). The results reported below include all participants regardless of their sexual orientation, as current theorizing and research do not yet adequately explain the evolutionary or biological origins of homosexuality [40]. Consequently, there is no reason to expect that bi-/homosexual individuals' set-size preferences would be different from those of their same-sex counterparts or, if they are different, in which way they might be so. Furthermore, this study did not require participants to think about opposite-sex individuals specifically. (Moreover, analysis of only the heterosexual participants does not lead to different conclusions.)

Materials and Procedure: Participants were given a survey containing questions concerning the role of mate choice set-size in preferences and expected choice-related affect and demographic items (including sex, age). Specifically, participants were asked to imagine that they had signed up to a dating website with the goal of selecting the one individual with whom they would most prefer to make contact. They were further asked to imagine being presented with a list of potential mates. For each of 10 option set-sizes (1, 4, 10, 20, 50, 100, 250, 600, 1000, 5000), participants were asked to rank the sets according to their preferred set-size for selection (no ties permitted) and to rate the sets, using 7-point Likert-type scales, along several dimensions: the expected difficulty of making a selection from the set; their anticipated satisfaction with the choice (i.e., the person selected from the set); their anticipated regret concerning their selection from the set; and their expected enjoyment of the selection process in each set. The final page of the survey asked participants to report their gender, age, sexual orientation, and sexual relationship motivation. To assess this last construct, participants were asked, "What do you want from a romantic relationship right now?" The response alternatives were: "To have a casual sexual partner"; "To have a casual dating partner"; "To have a steady dating partner"; "To have a serious committed relationship"; "To be married." Prior research confirms the validity of this single item as a measure of increasing level of commitment to one sexual-romantic partner [42]. This item was included in order to explore if and how sex differences in sexual motivation might account for potential sex differences in participants' expectations as to how option sets of varying sizes would affect them.

Results and Discussion

Analysis Notes: We conducted a 2 (participant sex: male versus female) $\times$ 10 (set-size: 1 versus 4 versus 10 versus 20 versus 50 versus 100 versus 250 versus 600 versus 1000 versus 5000) mixed model Analysis of Variance (ANOVA) for the ranks of preference and for the ratings of **difficulty**, **regret**, **satisfaction**, and **enjoyment**, with repeated measures on the second factor. For each of these five repeated measures variables we tested linear and quadratic effects (expecting the former, but open to the latter). We also explored whether participant sex moderates these effects, as some evolutionary-based theories suggest that men and women may have different set-size preferences (e.g., Sexual Strategies Theory [20]), with men supposedly preferring more mating opportunities than women.

We used a parametric statistical test to analyze the preference ranks, because theorizing regarding this practice [43]–[45] indicates that nonparametric and parametric analysis of ranks yield nearly identical p-values, and the assumptions underlying parametric statistics like ANOVA are not, in fact, violated when analyzing ranks.

Before testing our hypotheses, we investigated whether male and female participants differed with respect to their sexual relationship motivation. The results of an independent t-test indicated that men ($M = 2.62$, SD $= 1.28$) were more likely than women ($M = 3.69$, SD $= 0.79$) to desire a less committed, shorter-term relationship, $t(86) = -4.49$, $p = 0.001$. Thus, if a sex difference in anticipated affect is found, it may be due to this sex difference in sexual relationship motivation, in which case a mediational model could be examined.

Desired Choice and Expected Affect: Analysis of stated preferences regarding ideal option set-size

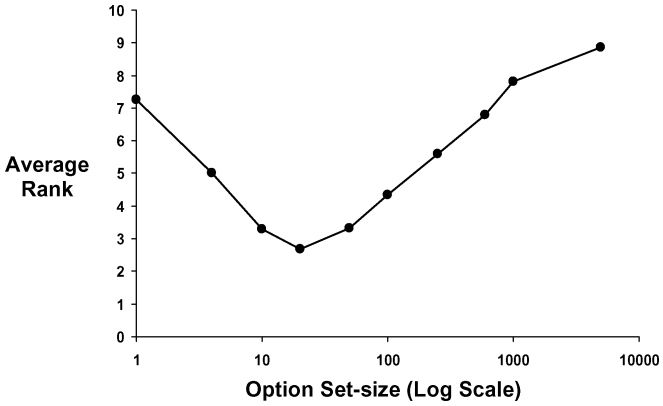

Fig. 1. Study 1: preferred number of options in mate choice set (lower ranks, higher preference).

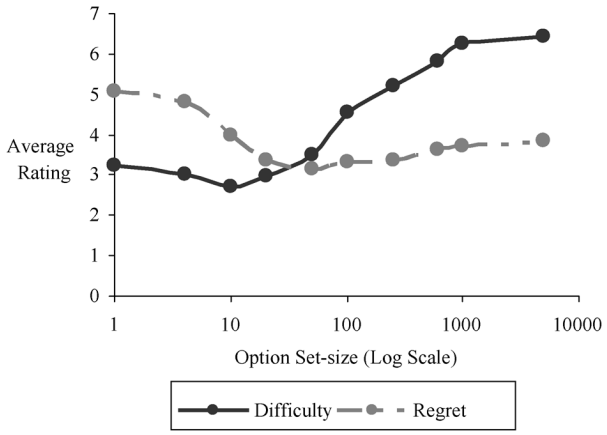

Fig. 2. Study 1: expected difficulty and regret by option set-size.

revealed evidence for reliable linear ($F\{1,81) = 37.58$, $p = 0.001$, $\eta_p^2 = 0.32$) and quadratic ($F\{1,81) = 195.53$, $p = 0.001$, $\eta_p^2 = 0.71$) effects. Neither of these effects depended on participant sex, $F(1,81) = 0.08$, $p = 0.78$, $\eta_p^2 = 0.001$, and $F(1,81) = 0.003$, $p = 0.96$, $\eta_p^2 = 0.000$, respectively. Given that the quadratic function yielded the largest effect size, this is the result we interpreted. As Fig. 1 illustrates, preference for options set-size is U-shaped, with both men and women expressing greatest preference (lowest rank) for a set-size of 20, with decreasing preference for both smaller and larger set-sizes.

Analysis of expectations regarding the difficulty of selecting a potential mate from the sets of varying sizes also revealed evidence for reliable linear ($F\{1,73) = 118.26$, $p = 0.001$, $\eta_p^2 = 0.62$) and quadratic ($F\{1,73) = 16.89$, $p = 0.001$, $\eta_p^2 = 0.19$) effects, neither of which were moderated by participant sex, $F(1,73) = 0.17$, $p = 0.68$, $\eta_p^2 = 0.002$, and $F(1,73) = 0.003$, $p = 0.96$, $\eta_p^2 = 0.000$, respectively. We interpret the stronger linear effect. As Fig. 2 illustrates, increasing set-size is associated with expectations of greater choice difficulty. That is, as the number of potential mates increases, so too does anticipated difficulty of selecting just one.

Analysis of participants' expectations regarding anticipated regret with their selection revealed evidence for reliable linear ($F\{1,78) = 6.02$, $p = 0.016$, $\eta_p^2 = 0.07$) and quadratic ($F\{1,78) = 42.73$, $p = 0.001$, $\eta_p^2 = 0.35$) effects, neither of which depended upon participant sex, $F(1,78) = 0.57$, $p = 0.45$, $\eta_p^2 = 0.01$, and $F(1,78) = 0.23$, $p = 0.64$, $\eta_p^2 = 0.003$, respectively. We interpret the stronger quadratic effect. As Fig. 2 also illustrates, increasing set-size is associated with expectations of experiencing less regret up until the set-size reaches approximately 50. After this, regret about one's choice is expected to increase again somewhat.

Analysis of participants' expectations regarding anticipated satisfaction with their selection revealed evidence for reliable linear ($F\{1,77) = 17.96$, $p = 0.001$, $\eta_p^2 = 0.19$) and quadratic ($F\{1,77) = 95.90$, $p = 0.001$, $\eta_p^2 = 0.56$) effects of option set-size. Neither of these effects depended upon participant sex, $F(1,77) = 0.04$, $p = 0.85$, $\eta_p^2 = 0.000$, and $F(1,77) = 2.04$, $p = 0.16$, $\eta_p^2 = 0.03$, respectively. We interpret the stronger quadratic effect. As Fig. 3 shows, increasing set-size is associated with expectations of greater satisfaction—but again only up to a point. After the size of the option set reaches 20–50, expected satisfaction flattens out and may even decrease as the option set-size reaches 250–600. Both men and women anticipate achieving highest satisfaction if they have had to search through a few dozen options, with diminishing returns obtained thereafter.

Finally, analysis of participants' expectations regarding anticipated enjoyment of selecting a potential mate amongst sets of varying sizes revealed evidence for reliable linear ($F\{1,77) = 8.84$, $p = 0.004$, $\eta_p^2 = 0.10$) and quadratic ($F\{1,77) = 223.32$, $p = 0.001$, $\eta_p^2 = 0.74$) effects, neither of which were moderated by participant sex, $F(1,77) = 0.23$, $p = 0.63$, $\eta_p^2 = 0.003$, and $F(1,77) = 1.64$, $p = 0.20$, $\eta_p^2 = 0.02$, respectively. We interpret the stronger quadratic effect. As Fig. 3 illustrates, increasing set-size is initially associated with expectations of enjoying the choice process more. After the set-size reaches 20–50, however, enjoyment is expected to decrease again. Men and women alike anticipate enjoying making a choice in the presence of some

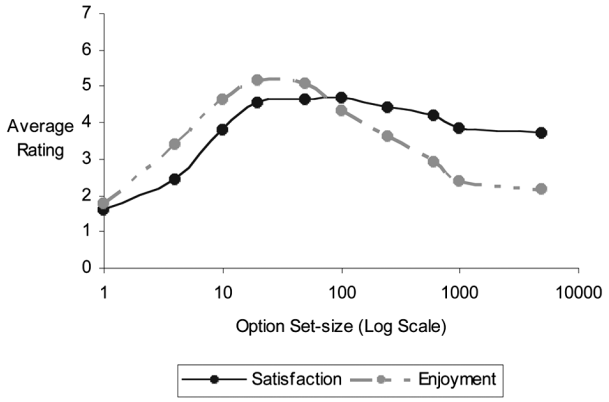

Fig. 3. Study 1: expected satisfaction and enjoyment by option set-size.

modicum of choice more than very little or very wide choice.

STUDY 2: HOW DO PEOPLE REACT TO DIFFERENT NUMBERS OF ONLINE DATE OPTIONS?

Study 1 demonstrated that both men and women expect that they will be more satisfied with their choice, experience less regret over their choice, enjoy the selection process more, and generally prefer to select a mate out of more rather than fewer options—at least up to a point. That point appears to be in the range of 20 to 50. But are these expectations sound—that is, are people well-calibrated to the challenges of choice in this domain? The primary purpose of Study 2 was to examine affective responses to the experience of selecting a mate amongst a small versus a larger option set. To create a strong comparison, we chose the smallest of our set-sizes where true choice is possible (4 options) along with a set-size approximating the presumed "ideal" on the dimensions explored in Study 1 (20 options).

A secondary purpose was to explore the effects of set-size on mate search memory, as this will allow us to determine whether participants considering 20 options, versus participants considering 4 options, experience greater information overload [46]. Information overload is thought to occur when decision quality initially increases with incoming information, but then decreases when the incoming information exceeds a point beyond the decision-maker's cognitive capacity. Later research confirmed the idea that there is a point beyond which information becomes "too much," but indicated that problems may only arise if the decision-maker is under time pressure [47] or, again, if the decision-maker does not have well-articulated preferences [12]. Evidence for information overload in our study would be indicated by decreased accuracy in memory for the option selected ("mate search memory") for those participants presented with the "ideal" set-size of 20 (versus those presented with a less-than-ideal set-size of 4).

Method

Participants: Ninety-six individuals (58 women, 37 men, 1 unreported) participated in return for £5. These participants were recruited from the University of Cambridge (UK) community and their average age was 21.77. Approximately 89% ($n = 85$) self-reported being exclusively heterosexual, 6% reported being bisexual ($n = 6$), 3% reported being exclusively homosexual ($n = 3$), and 2% did not respond ($n = 2$). In this study, because the methodology assumed attraction to the opposite sex, the analyses reported below exclude the homosexual and nonreporting participants, leaving us with 91 (56 female) participants for hypothesis-testing. The conclusions drawn from these results are generally the same if we do not restrict the sample to exclusively heterosexual participants.

Materials and Procedure: Following completion of an informed consent form, participants were directed to computer stations at which 1 of 4 experimental versions had been set up: a set of 20 profiles or one of three sets of 4 profiles (i.e., sets a, b, and c, which were randomly selected subsets of the sets of 20 men and 20 women). The sets of 4 versus 20 profiles were equivalent with respect to a separate group of participants' ($n = 88$) ratings of the individuals' physical attractiveness and overall MATE VALUE (average of perceived physical attractiveness, physical fitness, socio-economic background, financial power, parental fitness, extroversion, openness, neuroticism, conscientiousness, and agreeableness). The first screen informed participants that they would view profiles of people hoping to meet someone via an online dating service. Participants' given goal was to select the one individual they would most prefer to contact for further communication and, possibly, a meeting.

The participants were then presented with a mock dating website called DateOnline.com, which was composed of a series of Microsoft PowerPoint (2002) slides designed to look and respond like a website (adapted from Lenton et al., 2007). In addition to noting the target's sex, each profile offered a

variety of information, including the target's age, location, hair color, and 12 other criteria typically mentioned by most current dating websites. Each profile also contained a unique "free text response" in which, like most dating websites, the online daters had supposedly described themselves. All of the information provided was controlled across the male and female stimulus sets so that the same information provided about a male target was also given for a female target (save sex-related information such as stated sex, height, and pronouns) in order to maintain consistency across these sets and, thus, to control the materials simultaneously across participant sex. Each profile also contained a black and white photograph of the target individual's head and shoulders.

The first page of the DateOnline.com "website" resembled a standard welcome or entry page of a dating website and asked participants to indicate their sex. This action directed participants to the first of 4 or 20 profiles of opposite-sex individuals. Participants were instructed to view all of the profiles—one profile per page—in the order presented before making a decision, at which point they could spend as much time as desired looking at any or all of the profiles again. When they had decided upon an individual, they wrote his/her screen-name on a slip of paper.

Following their choice, participants were given a survey packet. Like Study 1, in this survey we asked participants to report—via 7-point Likert-type scales—their difficulty, regret, enjoyment, and satisfaction with the choice or choice process. This time, however, they reported choice-related affect based on experience. Additionally, participants were asked to report on the degree to which they desired to choose from more versus fewer profiles.

Finally, we presented participants with a cued recall test to assess their recollection of the characteristics possessed by the option chosen. We reminded participants of the 15 criteria comprising a profile (age, location, hair color, height, etc.) and, for each criterion, asked that they recall the relevant characteristic of the person they chose (e.g., brown hair). We also asked that they recall and write down as much as possible from this person's text-based self-description. After completing this task, participants filled out the demographic section (as described in Study 1).

A research assistant (RA) coded these two parts of the recall test separately. For the criteria recollection part, a response was coded as "0" if it was missing or wholly incorrect, "0.5" if it was partially correct (e.g., if they wrote "brown" for hair color instead of "light brown"), and "1" if the response was exact or the gist was wholly accurate (e.g., "normal" or "average" build rather than "medium"). We summed together the values for the 15 responses to obtain a criteria memory score (minimum $= 0$, maximum $= 15$; Cronbach's $\alpha = 0.79$). For the self-description recall part, the RA counted the number of correctly recalled details contained within each self-description (gist or exact). That is, for each participant the RA identified the number of traits/interests/activities recalled that was actually (or gist-wise) contained in the selected profile. The RA also counted the number of confabulations (traits/interests/activities recalled that were **not** actually or gist-wise contained in the selected profile) within each self-description recall.

Results and Discussion

Analysis Notes: All of the analyses reported in this section were performed using multiple linear regression wherein the dependent variable (e.g., satisfaction) was regressed on choice set-size (4 versus 20, contrast coded as -1 and $+1$, respectively) and participant sex (thus simultaneously controlling for sex of the stimulus set). Furthermore, these analyses have had outliers removed in order that the reported findings would be more representative of the majority of participants' responses. Cook's D, Studentized Deleted Residuals, and Levers were utilized to identify the outliers, in accordance with criteria described in Judd and McClelland [43] (e.g., SDR $> |2.5|$, Levers > 0.2, and unusual Cook's D). No more than three participants' data were excluded from any single analysis (except for that of memory score, in which five outliers were identified and removed). As in Study 1, prior to hypothesis-testing we examined whether the male and female participants differed with respect to their sexual relationship motivation. Unlike the first study, an independent t-test indicated that men ($M = 3.17$, SD $= 0.95$) and women ($M = 3.45$, SD $= 0.81$) were not distinct in terms of the degree to which they desired a short- versus long-term relationship, $t(89) = 1.47$, $p = 0.14$. Thus, if sex differences are found in experiential choice-related affect and memory, they would not be due to a sex difference in sexual relationship motivation.

Desired Choice and Experienced Affect: In Study 1, participants reported that they would prefer to select a mate among 20 profiles rather than 4. Corroborating this expectation, results in Study 2

revealed that participants in the 20-profile condition ($M = 4.20$; SD $= 1.32$) were less likely to want more profiles from which to select than those in the 4-profile condition ($M = 6.34$, SD $= 0.84$), $t(1, 85) = -9.08$, $p = 0.001$, $pr = -0.71$. This finding depended, however, on participant sex, $t(85) = 3.14$, $p = 0.002$, $pr = 0.33$. To investigate the nature of this interaction, we examined the effect of the set-size manipulation separately for men and women. The results showed that while both men and women wanted more profiles in the 4-profile condition (Men: $M = 6.43$, SD $= 1.02$; Women: $M = 6.29$, SD $= 0.71$) than in the 20-profile condition (Men: $M = 5.13$, SD $= 1.19$; Women: $M = 3.64$, SD $= 1.08$), the difference was smaller for men than for women, $t(32) = 3.41$, $p = 0.002$, and $t(51) = 10.66$, $p = 0.001$, respectively. The means suggest that women were more likely than men to perceive a set of 20 as being nearer to their ideal option set-size, whereas men perceived this same set-size as still being somewhat too small.

In Study 1, participants also expected that while choosing among 4 versus 20 would be equally difficult, they expected to be more satisfied, experience less regret, and better enjoy choosing a potential mate from a set of 20 than a set of 4 options (as determined by individual t-tests, not included here; details available upon request). In accord with this, participants in Study 2 did not find selecting among 20 options ($M = 4.06$, SD $= 1.77$) to be any more difficult than selecting among 4 ($M = 3.77$, SD $= 1.63$), $t(88) = -0.47$), $p = 0.637$, $pr = -0.05$. And this was equally true among the male and female participants (i.e., there was no condition x participant sex interaction), $t(88) = 1.41$, $p = 0.163$, $pr = 0.15$. But contrary to the expectations gathered in Study 1, participants in this study did not find selecting among 20 ($M = 5.30$, SD $= 1.46$) to be any more satisfying than selecting among 4 ($M = 5.22$, SD $= 1.50$; $t\{87\} = 0.43$, $p = 0.667$, $pr = 0.05$), nor did they experience any less regret when choosing from a set of 20 ($M = 2.39$, SD $= 1.14$) than from a set of 4 options ($M = 2.25$, SD $= 1.19$; $t\{86) = -0.32$, $p = 0.750$, $pr = -0.04$). Participant sex did not qualify either of these results, $t(87) = 0.89$, $p = 0.376$, $pr = 0.10$, and $t(86) = 0.84$, $p = 0.404$, $pr = 0.09$, respectively. And finally, participants' enjoyment was not influenced by whether they chose a potential mate from a set of 4 ($M = 4.91$, SD $= 1.35$) or a set of 20 ($M = 4.35$, SD $= 1.69$), $t(87) = -1.62$, $p = 0.110$, $pr = -0.17$. Again, there was no interaction between condition and participant sex, $t(87) = -0.25$, $p = 0.801$, $pr = 0.03$. See Fig. 4 for a direct comparison of expected and experience-based choice-related affect.

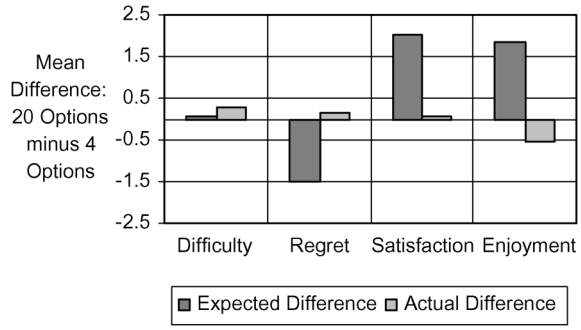

Fig. 4. Expected (study 1) versus experienced (study 2) choice-related affect as a function of choice set-size.

Mate-Search Memory: Set-size had some impact on participants' abilities to recall their selected mates' characteristics. On average, participants choosing among 4 profiles ($M = 10.22$, SD $= 2.00$) obtained a significantly higher "criteria memory score" than those choosing among 20 profiles ($M = 9.12$, SD $= 2.63$), $t(84) = -2.83$, $p = 0.006$, $pr = -0.30$. This effect was qualified, however, by an interaction with participant sex, $t(84) = -2.27$, $p = 0.026$, $pr = -0.24$. To understand the nature of this interaction, we examined the effect of set-size for men and women separately. These analyses revealed that set-size had no effect on women's recall for the profile criteria (4-profile: $M = 10.06$, SD $= 2.15$; 20-profile: $M = 9.77$, SD $= 2.48$), $t(53) = 0.46$, $p = 0.648$. Men in the 4-profile condition ($M = 10.50$, SD $= 1.76$) recalled significantly more criteria than men in the 20-profile condition ($M = 7.90$, SD $= 2.53$), $t(29) = 3.34$, $p = 0.003$.

Results also indicated that participants in the 20-profile condition ($M = 0.67$, SD $= 0.89$) were more likely than those in the 4-profile condition ($M = 0.26$, SD $= 0.49$) to evince memory intrusions (i.e., confabulations) in free recall of the self-descriptions, $t(87) = 2.73$, $p = 0.008$, $pr = 0.28$. There were no condition differences, however, with respect to the accurate recall of the self-descriptions' content ($t\{75\} = -0.57$, $p = 0.569$, $pr = -0.07$), as participants in the 20-profile condition ($M = 2.67$; SD $= 1.28$) showed a similar level of accurate memory for the contents of the self-description to those in the 4-profile condition ($M = 2.68$, SD $= 1.44$). Overall, it would appear that having more choice may not necessarily lead to less accurate memory, but it may bring about memory intrusions, which also may be an indication of choice overload.

GENERAL DISCUSSION

To summarize our findings, Study 1 showed that participants of both sexes **expected** to experience more difficulty in choosing from a set of mates the larger that set became, which supports our hypothesized monotonic relationship. However, for all of the other aspects of the choice process—regret, satisfaction, and enjoyment—as well as for what set-size they would most prefer, male and female participants' expectations were better fit by quadratic functions. In each of these cases, the expected "ideal" or most preferred mate option set-size was in the range of 20 to 50 potential mates to choose from. Notably, these expectations did not depend on participant sex. But does this match what men and women end up preferring when they actually face such a choice? This is what we tested in Study 2, where we found that, while small (4 options) and larger (20 options) set-sizes were experienced as equally difficult to choose from, the expected preference for the larger set-size in terms of more enjoyment and satisfaction and less regret did not materialize: An ostensibly "too-small" option set produced the same affective experience as an ostensibly "ideal" option set. Thus, although people **think** they would be more satisfied, less regretful, experience greater enjoyment and, thus, prefer selecting a potential long-term mate from 20 options, their choice experience does not generally confirm these expectations. Instead, the supposedly ideal set-size yields no differential affect, and some indication of poorer overall memory, compared to the smaller set of 4 options.

Of course, as is standard in studies investigating the effects of option set-size on consumers' choice-related affect (e.g., [25]), we employed single-item measures of anticipated and experienced affect. As such, our ability to say something about discrete emotions is limited. Furthermore, our first study presented the 10-option set-sizes in an increasing (versus decreasing or even random) manner, while the second study employed only 2 of these 10 set-sizes, and in a between-subjects design—it would be interesting to relax all of these limitations (cf. [48]). The experimental instruction of selecting only one person out of the choice set to pursue further allowed our results to be compared with those from other consumer choice studies that similarly imply selection of a single item (e.g., one flavor of jam to purchase), but it may not match what most people are doing when they search for mates online; whether this is the case, and what impact there would be from allowing people to select as many potential mates as they wanted, should be investigated further. Finally, our use of a college population of participants, who may not have been motivated to search for a mate, could have reduced the effects we found; studies using people actually seeking mates, preferably via online sites that could be experimentally manipulated, would provide even more convincing data.

Nevertheless, these findings contribute to the long-standing body of evidence showing a mismatch between what people say and what they do [49], [50], or what they think they will feel and what they actually feel [51], as well as add to more recent research showing that this mismatch holds true in mate choice behavior more specifically [52]. Such findings may lead researchers who are interested in online behavior to conclude that they should not bother to measure attitudes at all. But because attitudes **can** guide future behavior, attitude measurement still possesses utility: The intention to repeat an experience may depend more on a person's expectations of that experience, rather than on the experience itself [53], hence, presumably, the popularity of websites that advertise "millions of opportunities" (e.g., Match.com).

Our results also suggest that theorizing about the "downsides" of too-much-choice ought to make a distinction between choice-related affect versus choice outcome. We proposed that mate choice is a domain in which people possess well-articulated preferences, in which case extensive choice is dealt with by simpler choice strategies, like satisficing [12]. Satisficing lowers cognitive demand [17], and the chooser with well-articulated preferences **feels** better because the task is less onerous as a result. But although a "well-articulated chooser" faced with an extensive set of options feels (at least) as good as one faced with less choice, the chooser is also likely to choose less well. The results of Study 2 support this line of reasoning. Also supporting the line of reasoning that more choice can feel the same as less choice, but simultaneously lead to worse outcomes is a similar study done by the first author [54]. Lenton and Stewart presented female participants with a small- (4) and ideal-sized (24) option set, but included a large (64) option set as well, which should have been outside the range of both expected preferences (per Study 1) and humans' natural upper limit on available mates. This study also showed that set-size had no impact on choice-related affect. The results of this study also revealed, however, that as the option set-size increased, participants were more

likely to report having used search strategies (e.g., elimination-by-aspects or lexicographic) that are likely to miss high-quality options. As a consequence, people choosing from extensive online mate options are less likely to identify the truly best match(es) for themselves. Significantly, Study 2's results were observed with a relatively conservative operationalization of more choice (i.e., 20 options), suggesting that the potential downsides of increased choice may be even greater in the modern mating game, where it is not uncommon for singles to be confronted with 30 options (speed-dating) or even 1000 (web-dating).

We believe that our findings have practical implications for the design of mate selection aids. Web designers are savvy to the notion that decision-makers need help weeding through the multitude of options with which they are presented on the internet and, to this end, they have developed technology to aid online decision making [1]. Decision technology has also been implemented in dating websites (e.g., one-way or two-way matching between members based on their profile characteristics and selection criteria [39]). However, dating sites appear to have been designed with the implicit philosophy that the more profiles a user's search yields, the more satisfied the user will be. For instance, dating websites do not encourage users to be selective. An example is Yahoo.com, which explicitly alerts users to be less selective in their search criteria whenever their search yields fewer than 51–60 profiles. Study 1's results suggest that this alert may backfire, as 50 is about the maximum amount of choice users expect to desire. Similarly, websites implement very generous upper limits to users' search results. For instance, users who search for mates on Match.com are presented with a nonsortable list of 500 profiles. This list is even longer on Yahoo.com, where the list reaches 1000 profiles. Our results lead us to expect that on sites with so much choice, users will likely find themselves browsing ever more profiles in an increasingly superficial way. Hence, online decision aids that can put reasonable limits on choice seem desirable. Such choice-limiting aids have become available (e.g., Chemistry.com sends subscribers no more than 5 new profiles a day), but they do not seem to have caught on: For instance, the online version of SpeedMatching.com [55] allowed only 4–8 profiles to be visited, but this website was subsequently replaced by Match.com's extensive choice universe.

We also note that this ever-expanding list of viable profiles could be linked to the growing practice of dating sites to compute and display overall match scores. These scores indicate how well a given mate fits the user's wishes, all criteria considered. This practice implies that websites allow users to be compensatory (i.e., to trade off a good value on one criterion with a bad value on another), but in so doing they leave users with very long lists of options [1]. It then becomes particularly important to let users delete profiles from search lists, as Yahoo.com and PerfectMatch.com allow users to do. Lastly, our results lend psychological basis to a design feature that a growing number of dating sites are implementing: the possibility of saving profiles that the user deems interesting during the search process. This possibility is desirable as it can counteract memory confusions due to information overload and too-large sets of profiles. In short, we urge designers of dating websites to keep in mind that there is a balance to be maintained between people's desire for a large number of options (up to a point), and the fact that more choice will increase the use of simplifying heuristics which may have potentially negative consequences on choice outcome (e.g., a real mismatch between the chooser's desires and the qualities of the individual(s) chosen).

It is important to again emphasize that our research shows that people's expectations concerning the effects of option set-size on choice-related affect are not wholly linear or monotonic, as originally hypothesized: Study 1 revealed that participants expect increasing choice to result in greater enjoyment, less regret, and enhanced satisfaction only up to a certain point. Thereafter, they anticipate that the benefits will decrease. This fits with recent research showing that choice motivation first increases (more is better), then decreases (less is more, or too-much-choice), as set-size increases [48]. Study 2 indicates, however, that people may misjudge the point at which the costs associated with greater choice outweigh the benefits. This research thus shows that, while expectations about the subjective consequences of having too-much-choice are to some extent calibrated (i.e., people accurately anticipate that there is such a thing as too-much-choice), people mispredict their subjective experience of greater choice at given points in the distribution of choice. In other words, people may overestimate the point at which more choice might become too much.

Notably, our findings indicate that men and women do not differ in their expectations regarding the effects of smaller versus larger sets of potential mates, nor do they differ greatly in their reported

experiences dealing with option sets of varying sizes. The sex differences we did find—where men (versus women) in the 20-option condition reported wanting still more profiles, and men's but not women's memory for the criteria of the chosen profile depended on the number of options seen—could not be explained by a sex difference in sexual motivation, as men and women in Study 2 did not differ in this respect. Stenstrom, Stenstrom, Saad, and Cheikhrouhou in this Special Section [5] suggest that sex differences in response to a website may result from evolved sex differences in other domains, such as spatial navigation, object location, and color perceptions. In our case, the sex differences we observed probably arise from an unmeasured difference in men's and women's mating psychology.

Returning to our primary results, why do men and women **think** they will prefer a relatively large option set in the first place? Such a conundrum could be explained by the mismatch hypothesis [34], which argues that our minds evolved in past natural environments that do not match the structure of modern environments in some key ways. In the case of mate choice, our minds are adapted to dealing with few, sequentially-presented options [56]. In ancestral environments, humans were likely to have detected the benefits of choosing from among more rather than fewer options (from a statistical point of view, and assuming randomly-drawn sets, the better option is more likely to be found in a larger set). Given the strong upper limits on the number of options (whether mates, or habitats, or food) that might have been encountered at any one time, our ancestors rarely would have faced the costs associated with having too many options. Notably, the size of the mate option set that was expected to be most ideal (around 20 to 50) is not far off from the maximum number of options we were likely to have faced in our ancestral environment. Following Dunbar's theorizing [33], if the average human group size consisted of approximately 150 people, and we assume that half of these were women and half men and, further, that fewer than half of each sex were fit for reproduction (e.g., age limits, health limits, etc.), then the rough size of the set of local options from which our ancestors could choose was around 35. Of course, the option set would have been even further constrained because of pre-existing pair-bonds between some members of the group. According to this logic, while we are built to be attracted to more options, we are not adapted to deal with the excessive number we see today. As a consequence, trading off the costs of excessive choice against the potential benefits of higher quality choices is something that we may not be able to do well. This possibility also seems to hold in some domains for other species, such as mating grouse: As option set-size increases within a naturally occurring range, mate choice quality is enhanced, but beyond this natural upper limit, choice quality decreases [32].

We are thus left to wonder whether people can be persuaded that having fewer options than they would prefer is a good thing—a view that would be particularly beneficial in online choice domains, where one can spend a great deal of time comparing and contrasting options, only to end up being equally (dis)satisfied or, perhaps worse, less likely to identify someone who is truly suited to them. It is likely to prove difficult to persuade people of such a notion. First, if the downsides of relatively greater choice are not necessarily immediate (e.g., choosers may not experience regret until they have the time and motivation to reflect upon their choices) nor significant (e.g., a chooser selects a nonoptimal jar of jam from a large choice set, as in Iyengar and Lepper's studies [25]), learning about these disadvantages might only happen after considerable delay and repeated exposure to the choice situation.

Second, if decision environments in general are evolving in the direction of offering ever more choice, choosers are unlikely to have a point of comparison whereby they can experience the benefits of less choice. Third, even though expectations of the utility of an event often do not match the actual experience of it (e.g., [57]), again, research shows that it is the **expectation** that predicts the likelihood of participating in the same event in the future [53]. Thus, even if people were to eventually recognize lesser enjoyment in having made a selection from a larger option set, their expectation that a larger option set should yield something better might lead them to prefer the large option set again. Future research ought to investigate explicitly the impediments to learning that more choice can have its downsides, particularly in the online choice context, where the downsides could be as disastrous as divorce or forever being a "lonely heart."

Future research might also examine the role of attribute-overload, rather than option-overload, in online mate choice. An abundance of attributes may be more disconcerting to choosers than an abundance of options [6], in part because humans

may not be able to effectively process more than three to four variables simultaneously [58]. The average online dating profile contains over 100 items of information available for consideration by the chooser, with one online dating company's profiles containing nearly 500 items of such information [39].

Simultaneous presentation of multiple attributes is likely to be especially problematic in a domain (such as mate choice) in which attributes were—until very recently—typically encountered and evaluated sequentially [59]. Another direction researchers might pursue is investigation of the role of option similarity on choice-related affect and cognitions. For example, research suggests that choice deferral is not due so much to the avoidance of trade-offs but is, instead, the result of small (rather than large) differences between the options in terms of their overall attractiveness [60]. Given that larger set-sizes will necessarily possess smaller average differences amongst the options, it could be the case that eventual dissatisfaction in larger sets is not due to the set-size per se, but to decreasing option differences. In the online dating environment in which choosers are likely to first winnow down to a set of potential mates they already find themselves attracted to, which are likely therefore to be even more similar to each other, this problem may well be exacerbated.

Finally, the degree to which users experience satisfaction with a dating website and the features it possesses may depend on their cultural backgrounds, as well as their individual traits [61]. There may even be differences in women's experiences of a mate search website dependent on their current position in their menstrual cycle [4]. Thus, research into the impact of cross-cultural, personality-based, and even temporal differences on the effectiveness of online mate search tools is also needed.

CONCLUSION

Even though decision-makers understand that the increasing choice so often available in online settings may come at a cost, they overestimate the point at which these costs are likely to be experienced. Mismatch between the quantity of options available to choose among in our evolutionary past and the far greater numbers made available to us today through our communications technology is a plausible culprit. Because correction of this misperception is likely to be difficult for the unaided decision-maker, web-designers and e-communication experts should provide some assistance. We highlight some ways in which this correction can take place on dating websites, and we encourage more research into this important domain.

ACKNOWLEDGMENT

The authors would like to thank T. Loch, S. J. Haw, A. Shayevich, M. Bruder, and J. Mora for their assistance with these studies. They also extend their appreciation to K. S. Campbell, N. Kock, and the anonymous reviewers for their helpful comments on an earlier version of this article.

REFERENCES

[1] W. Edwards and B. Fasolo, "Decision technology," *Ann. Rev. Psych.*, vol. 52, no. 1, pp. 581–606, 2001.
[2] P. Pirolli and S. Card, "Information foraging," *Psychol. Rev.*, vol. 106, no. 4, pp. 643–675, 1999.
[3] G. Saad, *The Evolutionary Bases of Consumption*. Mahwah, NJ: Lawrence Erlbaum, 2007.
[4] G. Saad and T. Gill, "Applications of evolutionary psychology in marketing," *Psych. Marketing*, vol. 17, no. 12, pp. 1005–1034, 2000.
[5] E. Stenstrom, P. Stenstrom, G. Saad, and S. Cheikhrouhou, "Online hunting and gathering: An evolutionary perspective on sex differences in website preferences and navigation," *IEEE Trans. Prof. Commun.*, vol. 51, no. 2, pp. 155–168, Jun., 2008.
[6] B. Fasolo, G. H. McClelland, and P. M. Todd, "Escaping the tyranny of choice: When fewer attributes make choice easier," *Marketing Theory*, vol. 7, no. 1, pp. 13–26, 2007.
[7] SpeedDater. (2004, Sep. 20). Frequently Asked Questions [Online]. Available: http://speeddater.co.uk/faq/viewfaq.cfm?ID=4
[8] P. Haixia. (2005, Oct. 24). 5,000 turn up at 'meet and mate' mega event. *ChinaDaily.com*.
[9] Match.com. (2004, Sep. 20). Match.com Corporate [Online]. Available: http://corp.match.com/index/cs_index.aspx
[10] N. Kock, "Media richness or media naturalness: The evolution of our biological communication apparatus and its influence on our behavior toward e-communication tools," *IEEE Trans. Prof. Commun.*, vol. 48, no. 2, pp. 117–130, Jun., 2005.
[11] U.S. Census Bureau. (2004, Sep. 2). Survey of Income and Program Participation [Online]. Available: http://www.census.gov/population/socdemo/marital-hist/p70-80/tab01.pdf
[12] A. Chernev, "Product assortment and individual decision processes," *J. Personality Social Psych.*, vol. 85, no. 1, pp. 151–162, 2003.
[13] B. Schwartz, *The Paradox of Choice: Why More is Less*. New York: Harper-Collins, 2004.

[14] M. Zuckerman, J. Porac, D. Lathin, R. Smith, and E. L. Deci, "On the importance of self-determination for intrinsically motivated behavior," *Personality Social Psych. Bull.*, vol. 4, no. 3, pp. 443–446, 1978.
[15] E. J. Langer and J. Rodin, "The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting," *J. Personality Social Psych.*, vol. 34, no. 2, pp. 191–198, 1976.
[16] B. E. Kahn and B. Wansink, "The influence of assortment structure on perceived variety and consumption quantities," *J. Consumer Res.*, vol. 30, no. 4, pp. 519–533, 2004.
[17] H. A. Simon, "A behavioral model of rational choice," *Quart. J. Econ.*, vol. 69, no. 1, pp. 99–118, 1955.
[18] B. Schwartz, A. Ward, J. Monterosso, S. Lyubomirsky, K. White, and D. Lehman, "Maximizing versus satisficing: Happiness is a matter of choice," *J. Personality Social Psych.*, vol. 83, no. 5, pp. 1178–1197, 2002.
[19] D. M. Buss, "Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures," *Behavioral Brain Sci.*, vol. 12, no. 1, pp. 1–49, 1989.
[20] D. M. Buss and D. P. Schmitt, "Sexual strategies theory: An evolutionary perspective on human mating," *Psychol. Rev.*, vol. 100, no. 2, pp. 204–232, 1993.
[21] D. M. Buss and M. L. Barnes, "Preferences in human mate selection," *J. Personality Social Psych.*, vol. 50, no. 3, pp. 559–570, 1986.
[22] P. M. Buston and S. T. Emlen, "Cognitive processes underlying human mate choice: The relationship between self-perception and mate preference in Western society," *Proc. Nat. Acad. Sci. USA*, vol. 100, no. 15, pp. 8805–8810, 2003.
[23] M. Whitty and J. Gavin, "Age/sex/location: Uncovering the social cues in the development of online relationships," *Cyberpsychol. Behavior*, vol. 4, no. 5, pp. 623–630, 2001.
[24] A. T. Fiore and J. S. DonathHomophily in online dating: When do you like someone like yourself? presented at the 2005 Computer-Human Interaction Conf. [Online]. Available: http://www.ischool.berkeley.edu/~atf/papers/fiore_chi2005_short.pdf
[25] S. S. Iyengar and M. R. Lepper, "When choice is demotivating: Can one desire too much of a good thing?," *J. Personality Social Psych.*, vol. 79, no. 6, pp. 995–1006, 2000.
[26] B. Scheibehenne and P. M. Todd, "*When does the effect of too much choice occur?*," unpublished, 2007.
[27] D. F. DiClemente and D. A. Hantula, "Optimal foraging online: Increasing sensitivity to delay," *Psych. Marketing*, vol. 20, no. 9, pp. 785–809, 2003.
[28] J. M. C. Hutchinson, "Is more choice always desirable? Evidence and arguments from leks, food selection, and environmental enrichment," *Biol. Rev.*, vol. 80, no. 1, pp. 73–92, 2005.
[29] J. W. Bradbury, "The evolution of leks," in *Natural Selection and Social Behavior*, R. D. Alexander and D. Tinkle, Eds. New York: Chiron Press, 1981, pp. 138–169.
[30] H. C. Gerhardt, "Evolutionary and neurobiological implications of selective phonotaxis in the green treefrog, Hyla cinerea," *Animal Behaviour*, vol. 35, no. 5, pp. 1479–1489, 1987.
[31] H. C. Gerhardt and G. M. Klump, "Masking of acoustic signals by the chorus background noise in the green tree frog: A limitation on mate choice," *Animal Behaviour*, vol. 36, no. 4, pp. 1247–1249, 1988.
[32] H. Kokko, W. J. Sutherland, J. Lindström, J. D. Reynolds, and A. Mackenzie, "Individual mating success, lek stability, and the neglected limitations of statistical power," *Animal Behaviour*, vol. 56, no. 3, pp. 755–762, 1998.
[33] R. I. M. Dunbar, "Neocortex size as a constraint on group size in primates," *J. Human Evolution*, vol. 22, no. 6, pp. 469–493, 1992.
[34] B. Grinde, *Darwinian Unhappiness: Evolution as a Guide for Living and Understanding Human Behavior*. Princeton, NJ: Darwin Press, 2002.
[35] L. A. Peplau, "Human sexuality: How do men and women differ?," *Current Directions Psychol. Res.*, vol. 12, no. 2, pp. 37–40, 2003.
[36] D. Manasian, "Digital dilemmas: A survey of the Internet society," *Economist*, pp. 1–26, Jan., 25, 2003.
[37] J. A. Bargh and K. Y. A. McKenna, "The internet and social life," *Ann. Rev. Psych.*, vol. 55, pp. 573–590, 2004.
[38] R. Brym and R. Lenton, "Love at first byte: Internet dating in Canada," in *Society in Question: Sociological Readings for the 21st Century*, R. Brym, Ed. 4th ed. Toronto: Nelson, 2004, pp. 1–10.
[39] A. P. Lenton and C. Hobaiter, *Dating Online: Information Overload*, unpublished.
[40] B. Muscarella, G. Fink, K. Grammer, and M. Kirk-Smith, "Homosexual orientation in males: Evolutionary and ethological aspects," *Neuroendocrinol. Lett.*, vol. 22, no. 6, pp. 393–400, 2001.
[41] A. P. Lenton and A. Bryan, "An affair to remember: The role of sexual scripts in perceptions of sexual intent," *Personal Relationships*, vol. 12, no. 4, pp. 483–498, 2005.
[42] A. P. Lenton, A. Bryan, R. Hastie, and O. Fischer, "We want the same thing: Projection in judgments of sexual intent," *Personality Social Psych. Bull.*, vol. 33, no. 7, pp. 975–988, 2007.
[43] C. M. Judd and G. H. McClelland, *Data Analysis: A Model-Comparison Approach*. New York: Harcourt, Brace, Jovanovich, 1989.
[44] C. M. Judd, G. H. McClelland, and S. E. Culhane, "Data-analysis—Continuing issues in the everyday analysis of psychological data," *Ann. Rev. Psych.*, vol. 46, pp. 433–465, 1995.
[45] W. J. Conover and R. L. Iman, "Rank transformations as a bridge between parametric and nonparametric statistics," *Amer. Statistician*, vol. 35, no. 3, pp. 124–129, 1981.
[46] J. Jacoby, D. E. Speller, and C. A. Kohn, "Brand choice behavior as a function of information overload," *J. Marketing Res.*, vol. 11, no. 1, pp. 63–69, 1974.
[47] M. Hahn, R. Lawson, and G. L. Young, "The effects of time pressure and information load on decision quality," *Psych. Marketing*, vol. 9, no. 5, pp. 365–378, 1992.

[48] A. M. Shah and G. Wolford, "Buying behavior as a function of parametric variation of number of choices," *Psychol. Sci.*, vol. 18, no. 5, pp. 369–370, 2007.
[49] I. Ajzen and M. Fishbein, *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall, 1980.
[50] R. La Pierre, "Attitudes vs. actions," *Social Forces*, vol. 13, pp. 230–237, 1934.
[51] D. T. Gilbert and T. D. Wilson, "Miswanting: Some problems in the forecasting of future affective states," in *Thinking and Feeling: The Role of Affect in Social Cognition*, J. Forgas, Ed. Cambridge, UK: Cambridge Univ. Press, 2000, pp. 178–197.
[52] L. Penke, P. M. Todd, A. P. Lenton, and B. Fasolo, "How self-assessments can guide human mating decisions," in *Mating Intelligence: Sex, Relationships, and the Mind's Reproductive System*, G. Geher and G. Miller, Eds. New York: Lawrence Erlbaum, 2007, pp. 37–76.
[53] K. J. Klaaren, S. D. Hodges, and T. D. Wilson, "The role of affective expectations in subjective experience and decision-making," *Social Cognition*, vol. 12, no. 2, pp. 77–101, 1994.
[54] A. P. Lenton and A. Stewart, *How (Not Who) Do We Choose? Satisficing in Mate Choice*, unpublished.
[55] Match.com. (2004, Sep. 20). Online Speedmatching. [Online]. Available: http://online.speedmatching.com/
[56] G. F. Miller and P. M. Todd, "Mate choice turns cognitive," *Trends in Cognitive Sci.*, vol. 2, no. 5, pp. 190–198, 1998.
[57] D. Kahneman, "New challenges to the rationality assumption," *J. Institutional Theoretical Econ.*, vol. 150, no. 1, pp. 18–36, 1994.
[58] G. Halford, R. Baker, J. E. McCredden, and J. D. Bain, "How many variables can humans process?," *Psychol. Sci.*, vol. 16, no. 1, pp. 70–76, 2005.
[59] G. F. Miller, "Mate choice: From sexual cues to cognitive adaptations," in *Characterizing Human Psychological Adaptations, Ciba Foundation Symposium 208*, G. Cardew, Ed. New York: Wiley, 1997, pp. 71–87.
[60] R. Dhar, "Consumer preference for a no-choice option," *J. Consumer Res.*, vol. 24, no. 2, pp. 215–231, 1997.
[61] F. M. Zahedi, W. J. Van Pelt, and J. Song, "A conceptual framework for international web design," *IEEE Trans. Prof. Commun.*, vol. 44, no. 2, pp. 83–103, Jun., 2001.

Alison P. Lenton received the B.A. degree in women's studies from the University of California at Santa Barbara, in 1994, the M.A. degree in psychology from California State University, Long Beach, in 1997, and the Ph.D. degree in social psychology from the University of Colorado at Boulder, in 2002. She is a Lecturer in Social Psychology in the School of Philosophy, Psychology, and Language Sciences at the University of Edinburgh, Edinburgh, Scotland. From 2002–2004, she was a Lecturer in Social Psychology in the Faculty of Social and Political Sciences at Cambridge University. Her research interests and publications span the field of social psychology, and include studies on automatic stereotyping, biases in healthcare and legal decisions, the processes underlying judgments of sexual intent, and mate choice.

Barbara Fasolo received the B.Sc. degree in economics from Bocconi University, Italy, and the Ph.D. degree in social psychology from the University of Colorado at Boulder. She is a Lecturer in Decision Sciences at the Department of Management of the London School of Economics and Political Science, London, UK. She joined the LSE in 2004, after spending two years conducting postdoctoral research on adaptive behavior and cognition at the Max Planck Institute for Human Development in Berlin, Germany. Her work lies at the intersection of behavioral decision-making and prescriptive decision analysis. She studies the decision behavior of individuals across a wide range of applied domains, with a view to understand the processes behind, and the scope for improving these decisions by means of tools, training, or redesign of the environment.

Peter M. Todd received the M.Phil. degree in computer speech and language processing from Cambridge University, and the Ph.D. degree in psychology from Stanford University for his thesis on neural network models of the evolution of learning. He is Professor of Informatics, Cognitive Science, and Psychology at Indiana University, Bloomington. In 1995 he moved to Germany to help found the Center for Adaptive Behavior and Cognition (ABC), which has been at the Max Planck Institute for Human Development in Berlin since 1997. The Center's work culminated in the book *Simple Heuristics That Make Us Smart* (Gigerenzer, Todd, and the ABC Research Group; Oxford, 1999); the sequel, focusing on environment structures and their impact, is being finalized. In addition, Todd has coedited three books on neural network and artificial life models in music and has written papers on topics ranging from social decision processes in rats to modeling patterns of age at first marriage. His research interests cover the interactions between decision making mechanisms and decision environments, including how the two co-evolve over time, in domains including mate choice, food choice, and spatial and mental search.