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# What is Behind the Age Gap between Spouses? The Contribution of Big Data to the Study of Age Differences in Couples 

Marie Bergström


#### Abstract

In the majority of heterosexual couples the man is older than the woman. This observation is surprisingly consistent over time and continents. In almost all known societies, the husband is on average older than the wife. Yet although this fact is well established, the mechanisms at work are much less so. How does this sexual asymmetry come to be? Surveys are ill-fitted to answer this question; because they focus on individuals who are already in a couple, they do not adequately capture the dating process. This article relies on an alternative approach that mobilizes data from an online dating site. These services-which are now widely used in France-give an original perspective on women's and men's partner preferences and on matching mechanisms. In doing so, they provide new results. Where survey data suggest that the age difference is above all sought by women, the analysis of the website data shows that it is also desired by men, particularly when forming a new union after a separation. More generally, the study questions the notion of "partner choice" widely used in the sociological literature-and shows that dating is based on a compromise between female and male preferences that diverge rather than coincide. Through the example of age difference within couples, the article seeks to empirically demonstrate some of the opportunities "big data" can provide.


Keywords. Age—difference—Couples-Heterosexuality—Gender—Dating sites—Big data

In the majority of heterosexual couples, the man is older than the woman. This fact is surprisingly consistent over time and space-in almost all known societies, the husband is on average older than the wife, and only the magnitude of the gap seems to differ. The age difference is smaller in rich countries than in developing countries (Mignot 2010). Having been subject to significant variations over time (Lévy and Sardon 1982; Ní Bhrolcháin 1992), it decreased in most Western countries over the course of the twentieth century, but without disappearing (Mignot 2010). In France in 2012, the man was on average 2.5 years older than the woman in cohabiting heterosexual couples (Daguet 2016).

Although this phenomenon is now well established, its foundations are less so. How does this asymmetry between the genders come to be? Traditional surveys have trouble responding to this question. Because they focus on individuals who are already in a relationship, they do not capture the dating process that occurs beforehand. Sociologists studying couple formation thus arrive at the scene after the event and operate by deduction. People's preferences, their behaviour, their aspirations, and the matching process are never observed as such but rather deduced from existing couples. As a result, our knowledge of how couples are actually formed is largely based on theoretical models rather than on empirical work (Kalmijn 1998).

However, new sources of data make it possible to address this question in empirical terms. Online dating sites are a popular meeting venue today, particularly in France. They record a substantial amount of information about users and their behavior, which is increasingly studied by social scientists (Hitsch et al. 2010; Lin and Lundquist 2013; Potârcă and Mills 2015; Schmitz 2016). In this article, we draw on data from a French dating site to study the age difference between heterosexual partners. This data sheds new light on a now classic subject, enabling us to observe age preferences of both men and women in situ and to study the interaction between the sexes.

Through the example of the age gap, this article aims to provide an empirical illustration of the benefits of using big data in social science research. Whereas the debate on this topic is often abstract and
relatively disconnected from empirical study, this article demonstrates the opportunities that these new sources of data provide, and at the same time emphasizes the blind spots of the "conventional" quantitative approach. To do this, I bring together survey data (from the French "Epic" study) with internet data (from the website Meetic.fr). By revisiting the question of the age gap, the article also returns to the "epistemological unconscious" (Bourdieu 1972, trans. 1977) in studies on couple formation that largely rely on the use of surveys (Singly 1987). After a literature review on the age gap between spouses and a critical discussion of the theoretical and methodological premises of these studies, we propose a new approach to this social fact.

## Theoretical and Methodological Approaches to the Age Gap between Spouses

The spread of questionnaire-based survey techniques since the 1930s has had a structural influence on certain social sciences and their subdisciplines (Groves 2011). This is particularly true for the study of couple formation. The sociological literature on mate choice and union formation is almost exclusively based on the use of surveys and statistical analysis. This has been the case in France since the pioneering 1959 study by Alain Girard on the choice of spouse (Girard [1964] 2012). This study, Durkheimian in its approach and often compared to Suicide, has become a classic in the social sciences and a valuable pedagogic example (Rault and Régnier-Loilier 2012). It demonstrates sociology's effort at objectivation-knowing how to bring to light the social determinants of what appear to be the most intimate practices-that we find in all subsequent studies, particularly those on homogamy. This approach to union formation, based on questionnaire techniques and resolutely "explanatory" in nature, nevertheless has several blind spots. The literature on the age difference within couples illustrates both the objectivation these studies can achieve and the assumptions on which they rely.

## Couples as "Revealed Preferences"

In France, the age gap between spouses is mainly studied by sociologists, whereas, in other countries, it is a common topic also in other disciplines such as sociobiology and evolutionary psychology. There is a substantial Anglophone literature on the biological determinants of this phenomenon (Buss and Barnes 1986; Howard et al. 1987; Buss 1989; Kenrick and Keefe 1992; Greenlees and McGrew 1994; Buunk et al. 2001). Among the most well-known authors is David M. Buss who published a series of articles in the 1980s and 1990s on the evolutionary foundations of human mate choice (Buss 1989, 1995; Buss and Barnes 1986; Buss and Schmitt 1993). The principle is simple and has been taken up in many subsequent studies, arguing that human sexuality is governed by biological scripts that favour reproduction. According to this theory, men and women have different reproductive strategies and therefore their behavior and their expectations with regard to their partners are also different. The age gap plays a central role in this theory of matrimonial choice. Indeed, the strong trend of an average age difference between spouses is considered proof of universal and ahistorical sexual preferences based on biology.

This thesis is central to an article published in 2010 by Jean-François Mignot in la Revue française de sociologie. In his paper, the author provides an overview of the international literature on the age gap and presents a detailed study on union formation in France between 1978 and 1998, testing the "good reasons" men and women have for forming a couple where the man is older. Inspired by rational choice theory, the article's conclusion is above all based on a central idea of evolutionary psychology: "the fact that an average age difference in favour of men exists between spouses in the (quasi-) totality of all known human societies appears to fundamentally derive from the fact-also apparently universal-that men prefer younger women and women prefer older men. This seems to be due to the importance that men place on the physical attractiveness and potential fertility of their spouses,
and the importance that women place on the amount and the stability of their spouses' revenue or resources" (Mignot 2010, 316).

According to this explanatory model, the age gap derives from an exchange where men swap economic resources-correlated with advanced age-for women's esthetic and reproductive resources-associated with youth. Even when stripped of its naturalizing tendencies, this explanation immediately runs into an empirical problem. Because if men valued youth above all things in their partners, and if women valued primarily the social status of men, we should observe a large number of couples characterized by significant female hypergamy (women "marrying up") on the one hand, and a substantial average age difference on the other. Yet this is not the case, quite the contrary. In France, there is no longer any evidence of female hypergamy (Bouchet-Valat 2015) and large age differences are in fact rare-only $7 \%$ of cohabiting couples are characterized by an age difference of 10 years or more in favour of the man, and less than $2 \%$ show a gap of 15 years or more (Vanderschelden 2006; Daguet 2016). The sociobiology thesis is refuted by the facts. Although it may be attractive to some in theory, it fails to account for actual practices.

Although this literature may seem remote from sociology, it nonetheless illustrates a form of reasoning shared with a large portion of studies on couple formation. This consists in considering couples as "revealed preferences," an economic theory that was originally applied to the study of consumer preferences, and which assumes that actors' choices reveal or reflect their preferences (Samuelson 1938). Sociologists often reason in this way-implicitly and sometimes explicitly-when they suppose that couples and their characteristics (such as homogamy) reflect what actors are actively looking for in a partner (such as a level of education similar to their own). In the case of age differences between spouses, this leads scholars to consider this asymmetry as a strong preference shared by both genders.

However, this approach ignores the context in which dating takes place and does not take into account the external circumstances that may influence the relative age of spouses, and which do not necessarily reflect a preference. It also obscures the fact that the age difference may above all result from the desires of one partner, who either has more pronounced preferences, or a greater possibility of satisfying these, than their partner. Adopting an ex post facto approach makes it impossible for surveys to address this question. As the Canadian anthropologist Anthony Davies (1998) has noted, the result is often a confusion in levels of analysis: individual level preferences are deduced from an average age difference between partners observed at the population level.

## Consent to Male Domination?

In French social sciences, most studies on the age difference within relationships have come from demography, and particularly historical demography. This literature looks for an accurate description of the phenomenon before pursuing explanation and shows a great variation in mate choice, particularly regarding age. Several studies have demonstrated "the flexibility of the marriage market" (Ní Bhrolcháin 2000), particularly looking at the impact of war (and high death rates of men) on marriage. In the 1960s, Louis Henry (1966) emphasized the fact that the imbalance in the sexes resulting from the First World War had not led to high celibacy rates among women, as some might have assumed, because women turned to men of their own age or younger (less affected by the war) in search of partners. In other words, individuals adapt to the "supply" of available partners more than we might expect. When there are no available partners of a certain age they simply turn to younger or older potential partners. Maire Ní Bhrolcháin arrived at the same conclusion that age preferences are "much less rigid than we think" (1992, 2000, 899). In her opinion, social science researchers have
a tendency to overinterpret the age gap, which is by no means a necessary condition for the formation of couples.

Although these studies have the merit of emphasizing the flexibility of mate behavior, they do not answer the question of why, under normal circumstances, couples in which the man is older than the woman constitute the norm. This question is, however, the starting point for a series of articles published by the sociologist Michel Bozon in the 1990s, dedicated to the social processes that produce this gap (Bozon 1990a, 1990b, 1991). The author places his analysis of the age difference between spouses within a broader analysis of gender relations, i.e. the range of practices and representations that differentiate men and women, considering the age gap as "an original approach to the study of male domination" (Bozon 1990b, 329). He also uses alternative sources. The originality of this research compared to the existing literature lies in the use of studies that explore women's and men's ways of judging their partners.

Seeking not only to characterize unions but also to understand how they are formed, the "Formation of Couples" study conducted in 1983-1984 by Michel Bozon and François Héran asked respondents about their attitudes towards the age gap. This means they could identify whether one of the spouses was more attached to this asymmetry than the other. Presented in the form of a hypothetical scenario, the question aimed to establish whether the respondents would have "easily accepted the idea of being with someone who was between 1 and 4 years older than them," or "between 1 and 4 years younger than them." The result was indisputable: the age gap clearly appeared to be above all a female preference. At all ages, women demonstrated "a refusal of younger men," which had no male equivalent (Bozon 1990b, 346). The same conclusion can be drawn from the recent "Study of Individual and Conjugal Trajectories," conducted in 2013-2014 and coordinated by Wilfried Rault and Arnaud Régnier-Lollier. This study used a similar wording but questioned both those who were in relationships and those who were not (whereas the 1983-1984 study only questioned people already in a couple), and the results are highly similar (Figure 1). The refusal of an unusual age gap is much more pronounced among women than among men. Above all, it is particularly strong among younger women. Between 26 and 29 years old, more than two thirds of female respondents ( $68 \%$ ) refused the idea of a younger partner. Men, by contrast, were more open to the idea of an older partner, regardless of their own age. Only one man in five (20\%) rejected the prospect of a spouse older than himself.

However, a clear evolution can be seen over time; both genders appear to be less "conservative" than they were in the past. Figure 2 compares the responses to the two surveys, presenting the statements of respondents who fit the conditions of both studies (i.e., they were in relationships and aged between 26 and 44) to ensure the comparability of the results. Whereas the 1983-1984 study asked respondents about two age thresholds-between 1 and 4 years difference, and between 5 and 9 years difference-the 2013-2014 study only included a scenario of over 5 years difference. We can see that it is necessary to increase the age gap to reach the same levels of acceptance as were found thirty years earlier. However, women are still less inclined than men to say they would easily accept an unusual age gap. In this respect, young women again stand out as being particularly reticent to any age difference in their favor. For this group there has been less evolution over time.

These results are all the more striking as they have important implications in terms of gender relations. Indeed, given that age is a marker of social status-as we can see in the authority of older siblings over younger ones, parents over children, senior colleagues over junior ones, and so forth-it is not socially neutral that men are generally older than women within couples. Age-based superiority clearly expresses social superiority; gendered age differences reflect a sexual hierarchy. Arguing that it is women who seek this gap amounts to concluding that women "consent to domination," as the titles of Bozon's articles put it (1990a, 1990b).

Such conclusions suppose, however, that the studies are able to adequately capture men's and women's attitudes towards this asymmetry within couples. In the case of the indicator used here, a hypothetical scenario, it is difficult to know how interviewees understand the question and the way in which they answer it. More generally, the question is whether surveys can accurately grasp women's and men's preferences prior to forming a couple. The emergence of new sources of data sheds light on the limitations of this traditional survey approach.


Note: To the question "Would you easily accept the idea of being with someone 5 or more years younger than you?" 1\% of women aged 26-29 reply "Yes, that is exactly my case," $30 \%$ reply "Yes," and $68 \%$ reply "No," and $1 \%$ reply "I don't know".
Population: people living in metropolitan France, aged 26-65.
Source: "Epic" survey, Ined-Insee, 2013-2014.

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Figure 2-Rate at which respondents accepted the idea of an unusual age gap (older woman) in 1983 (either 1-4 years difference, or 5-9 years difference) and in 2013 (5 ormore years difference) (\%)


Note: In 1983, among men aged $26-29,87 \%$ said they would easily accept the idea of being with a woman 1-4 years older than themselves, but only $43 \%$ said they would accept the idea of a woman 5-9 years older. In 2013, among men the same age, $77 \%$ said they would easily accept a partner 5 or more years older than them.
Population: People in relationships aged 26-44 years old, living in metropolitan France in 1983 and in 2013.
Source: "Couple Formation" survey, Ined, 1983-1984; "Epic" survey, InedInsee, 2013-2014.

## Dating Sites as Observation Sites

Dating services have long been of interest to scholars studying couple formation, as they are seen as an alternative way of objectivating what is known as the "marriage market." Personal ads have been used to this effect both by sociologists and by demographers (Massari 1983; Singly 1984; Ní Bhrolcháin 2000), as well as by sociobiologists (Wiederman 1993; Greenlees and McGrew 1994). The spread of dating websites has only increased this interest in mediated encounters. The data from these platforms have now been used in several studies dedicated to social (Skopek et al. 2011; Schmitz 2012; Bergström 2016b) and ethno-racial homogamy (Feliciano et al. 2009; Lin and Lundquist 2013; Potârcă and Mills 2015). For sociologists interested in partner choice, these online services present a major advantage-not only in comparison to surveys, but also to the paper advertisements previously used-in that they record interactions between users. This provides two unprecedented opportunities for analysis.

First, these sites allow us to study dating as it happens and not ex post facto (after the event) as is the case for surveys on already-established unions. Indeed, questionnaire-based methodology turns the
sociologist into a kind of photographer, creating static and regularly renewed images of couples but without any real possibility to empirically account for their making. Dating sites provide a different vantage point because they capture the moment of the encounter. In so doing they offer an unprecedented methodological opportunity. Where surveys only record partner selection, these sites also record elimination, in other words modes of rejection that are inherent to dating but that traditional survey techniques cannot possibly grasp. Whereas the "objectivation of couples [...] leaves the question of their social production unanswered" (Singly 1987, 182), these websites provide the possibility to study the modus operandi of partner matching.

Second, these websites capture actual practices, where surveys only record the declaration of practices. Questionnaires suppose that respondents have a significant ability for reflexivity and raise the question of the coherence of their discourses. In the case of intimate relationships, we can question the ability and the willingness of women and men to accurately account for their union formation. These methodological issues are rarely addressed, however. While the terms and conditions of the production of an interviewee's discourse are frequently discussed and debated among qualitative sociologists, who are particularly sensitive to the issue of the "biographical illusion" (Bourdieu 1986), this is much rarer among those who use quantitative methodologies. This is further accentuated by the fact that, as Alain Desrosières $(2013,64)$ points out, those who use survey questionnaires are rarely those who produce them, and as a result, the concern for the way in which figures are produced is lost. "Once the quantification is carried out, the hesitations, the negotiations, and the translations implied in the shift from a world of words to a world of numbers all disappear, through a ratchet effect. We only look back when the numbers are challenged, i.e. in situations considered abnormal. Once they are transformed into variables, the figures are generally no longer debated. In fact, we explicitly expect them to be 'indisputable'."
In questionnaire-based studies, methodological concerns are more often raised over the "NA" category (no answer) than the accuracy of the answers that are actually registered, hidden behind ready-to-use variables. The emergence of new sources of data encourages us to reflect on what types of questions can be asked in a questionnaire and the nature of the answers we collect this way. This debate springs from the new possibilities offered to sociologists by big data, allowing for quantified observation. In this regard, big data is not only an alternative source of information, but offers new analytical perspectives that also lead, as we will see, to different results.

## When Meetic Met Survey

This article uses data from the French dating site Meetic.fr in order to study the production of age differences in couples. Launched in 2002, this website rapidly became one of the largest dating services in France, in terms of both visibility and number of users-to the point where it became synonymous with online dating itself. A collaboration with the company Meetic France enabled us to obtain two types of data used in this article.

First, the analysis is based on anonymized user profiles. These include a large amount of information that the users are advised to provide about themselves and their preferences. This information is collected using mostly multiple-choice questions that are all optional, with a few exceptions. Information on the gender, the date of birth, and the place of residency of the user, along with the gender and age of the desired partner are all compulsory for subscription. The analyses in this article focus on the age preferences indicated by the users. This information-which is exhaustive-is indicated in age brackets: the user chooses a minimum age and a maximum age, ranging between 18 and 99 years. Within these limits they can freely alter the age range, even reducing it to 0 (indicating a preference for someone aged between 45 and 45 years old for example). Other information from the profile, particularly the user's age and gender are also used to characterize these preferences.

Second, we look at the contact patterns. A second database is made up of metadata relating to all of the emails exchanged on the website. This analysis is by no means based on the content of the messages - which we never had access to-but simply the context: the identifiers for the sender and receiver profiles, the date and the time of the email. Combined with the user profiles, this data allows us to know "who is contacting whom."

The study draws on a population of users aged between 18 and 70 years old who all subscribed to Meetic in 2014. All had been "active users" over the course of the year, that is they had sent at least one email to one other person on the website. Although it is free to sign up to Meetic and to set up a profile, users (both male and female) have to "subscribe" in order to be able to exchange with other members. ${ }^{1}$ The users selected are therefore all paying members. The analysis is based on 401,208 profiles overall, $51 \%$ of whom are male and $49 \%$ are female, as well as on 25 million emails sent over the course of 2014.

This article also draws on the French survey "Study of Individual and Conjugal Trajectories" (InedInsee, 2013-2014). This study follows previous surveys on couple formation conducted by Ined (the French Institute for Demographic Studies), although it is different in that it questions both people currently in a couple and those who are not, and that is traces the full relationship trajectory of each respondent. In total 7,809 individuals aged 26 to 65 years old answered this biographical survey on couples and "significant romantic relationships" (Rault and Régnier-Loilier 2015).

This article thus brings together classic survey-based data with new empirical material. However, the potential of the latter must not overshadow its weakness; big data involves significant limitations that also apply to the data used here. Lack of representativeness is one of them. Not only are Meetic users not a representative sample of the general population, but it is possible that online dating is different from "ordinary" dating. In 2013, in France, $12 \%$ of women and $16 \%$ of men aged 26 to 65 years declared they had previously subscribed to an online dating site. Usage rates were higher among people who were not in a relationship at the time of the survey: $25 \%$ of women and $28 \%$ of men. ${ }^{2}$ The fact that these services are so widely used limits the worst selection biases. Unlike personal ads, which were only ever used by a minority (Bozon and Héran 1988), online dating is now an ordinary practice for single people in all social spheres (Bergström 2016a).

Similarly, relationships that begin online do not differ significantly from those formed elsewhere. They are neither more nor less homogamous than other couples, with the exception of unions that begin in the workplace, in school, or at university which, for obvious reasons, are more likely to bring together partners with a similar occupation or level of education (Bergström 2016b). As far as the age gap between partners is concerned, it is generally smaller in couples formed via dating sites ( 1.9 years) than it is on average ( 2.3 years). However, it falls in between the age gaps characterizing other kinds of couples-it is smaller than the average gap between partners that meet in the workplace ( 3 years), or through family ( 4.3 years), and larger than relationships that begin in places of study ( 1.3 years) or in nightclubs ( 1.4 years) for example. ${ }^{3}$ These small differences between online and offline relationships are a (necessary but non-sufficient) condition in order for dating sites to be relevant for sociological observation and comparison with surveys.

[^0]In addition to the issue of representativeness, there is also the question of veracity. Users do not always tell the truth on online dating sites; they approximate. This is the case on Meetic where, curiously, users are taller and slimmer than the population as a whole. They also tend to indicate their birth year with a preference for multiples of five-1975, 1980, 1985, etc. Several studies have showncontrary to what we might expect - that although these deviations from the truth are frequent online, they are not substantial (Toma et al. 2008; Schmitz et al. 2011; Zillmann et al. 2011). For example, declarations of weight and height on Meetic in fact only deviate slightly from the national average: for height users add two centimeters, and for weight men take off two kilograms and women take off five kilograms. These rounded figures therefore have a centrifugal effect on close numbers, without distorting the average significantly, meaning that the adjustments often fall within the limit of $+/-4$. There are good reasons to think that the same is true for the birth year. This tendency to round off one's age does mean we have to be cautious when interpreting the results, however. Therefore, rather than focusing on a particular age, this article looks at general trends in the variation and direction of age preferences, as observed online.

This new online data can by no means serve as a substitute for survey data, which remain unequalled in terms of quality and detail. This new source can however shed light on areas that traditional methods cannot observe. Because it enables us to examine dating, whereas surveys focus on established couples, this data allows us to adopt an alternative viewpoint on the same topic. This article provides a cross analysis on the question of age differences, combining the data from the "Epic" survey with data from the Meetic website.

## Box 1-From dating to couples, between sex and love

The data used in this article look at two very different moments in the process of meeting a partner. While the "Epic" survey includes information on established couples, the Meetic website tells us about initial encounters. What happens after these encounters, what becomes of the relationships, we do not know. The website data only tells us who is interested in whom and which solicitations are accepted and which are ignored. These are valuable indicators when studying dating-the moment when the range of possibilities is large and forming a couple is just one scenario among others. It is precisely these uncertain early stages of dating (although decisive ones) that remain invisible to surveys.

The two sources of data do not measure the same thing. This is all the more true given that online encounters do not always lead to an actual meeting and, when they do, they may result in short-term sexual relations rather than the formation of a couple (Bergström 2015). This study does not distinguish between interactions based on their outcome. Firstly, user intentions are not necessarily restricted to one outcome (casual dating or couple formation) ${ }^{4}$ and expectations and experience do not always overlap-it is possible to be looking for a romantic relationship and only experience short-term relationships, and vice versa. Moreover, the behavior of users does not necessarily differ according to the kind of relations they are seeking. It is frequently assumed that people's expectations with regard to a long-term partner are radically different from those regarding a short-term partner. The underlying assumption is that social considerations come into play in couple formation whereas sexuality is free from these stakes. This overlooks the fact that dating-of any kind-involves judgments of taste regarding what is beautiful, ugly, refined, vulgar, attractive, or repulsive. In other words, all encounters involve socially and sexually situated schema of perception. This explains why sexual encounters also tend to be endogamous, contrary to what is commonly presumed (Laumann et al. 1992, 243-57) and why they are characterized by age gaps similar to those of couples. ${ }^{5}$ We also note that on both Meetic and other European sites (Skopek et al. 2011) contact behavior is much the same (in terms of the age of potential partners contacted) regardless of the nature of the relation sought. For all these reasons, the analysis that follows looks at the full range of online interactions, which illustrate the large range of romantic and sexual possibilities in dating.

## How the Age Gap Is Produced

Online dating works like a looking glass that shows us the organization of heterosexuality. It reflects the terms and conditions of heterosexual dating, along with its codes, its norms, and its tensions, making them all visible to the sociological eye. In so doing, these services reveal the fundamentally gendered nature of dating. By taking into account these gender differences, and the way they structure the dating process from the beginning to the end, data from these sites renew our knowledge of how the age gap between partners comes to be. This article first shows the different (and even incomparable) ways in which men and women express their expectations with regard to a partner, then highlights their varying attitudes towards the traditional age gap between partners, and finally shows the "bargaining" process from which heterosexual relationships stem, which does not reflect female and male preferences to the same extent.

[^1]
## Age Preferences "In Situ"

One of the first questions users are asked when they sign up for an online dating site is the desired age of a potential partner. This information is registered in age brackets, and Meetic users seem to take the question seriously. The website suggests a very large default age range, from 25 to 45 years old, which users overwhelmingly reject. Only $6 \%$ of women and $10 \%$ of men do not alter this default answer. In other words, a vast majority of users personalize the age bracket in order to make it closer to their own age. The apparently incongruous nature of Meetic's default answer is already an indicator that, in terms of age, not everything goes.

Yet the users' preferences are relatively generous (Figure 3), well beyond the actual age gap in existing couples. Whether or not they have an "ideal age," those looking for a partner online indicate much broader age ranges for their potential mates. Men indicate an average range of 13.8 years (between the minimum age and the maximum age) and women an average of 10.9 years. Users are the most restrictive in their preferences when they are young, but they become less so in their thirties-the magnitude of the age interval peaks at 14.2 years for women aged 34 , and 15.7 years for men aged 37-before becoming more restrictive again as they get older. This trend is particularly clear for women; among men the range of possibilities remains much broader at all ages. This tells us that, far from being a linear scale, age is more or less important for the two genders and at different stages of life. Differences are amplified at the poles of the age spectrum; when users are young, potential partners are easily considered "too young" or "too old," and among older users the specter of old age leads both women and men to focus on people either younger than themselves or close in age.

Figure 3 therefore reveals something that is rarely emphasized in the literature on age differences: men and women's preferences are much alike. As people get older, their desire for a younger partner increases. This trend is stronger for men but it also holds true for women. The two genders are therefore less opposed in terms of age preferences than is often claimed. This relative similarity in preferences means that women's and men's attitudes towards the traditional age gap diverge. The observations from Meetic reveal an inversion of attitudes with age. Among young people, it is indeed women who express a clear preference for an older partner. From age 35, however, they become progressively more open to the idea of a younger spouse, and the desired age range narrows down around their own age. After having demonstrated a strong desire for a traditional age gap when they're young, women from their mid-thirties are above all more interested in men close to themselves in age.

Figure 3-Age preferences as stated in the userprofilies by gender and age: range between average minimum age and average maximum age compared to the age of the user


Note: The bars indicate the range between the average minimum age and the average maximum age, by gender and age of the users. In order to facilitate the comparison, the intervals are recorded in comparison to the age of the individual (zero), indicating a preference for partners who are older $(+)$ or younger (-). For example, profiles of 20-year-old women for example express a preference for an average minimum age of 20.8 years and an average maximum age of 29.5.
Population: active user accounts on Meetic in 2014.
Source: Meetic.fr user database, Meetic Group, 2014.
Male preferences are above all marked by an increasing preference for younger partners. Since users have to be over 18 to sign up to dating websites, men aged 18 cannot indicate a preference for a younger woman. As soon as this possibility becomes available to them (that is, from age 19) the minimum age progressively drops, increasing the distance between the minimum age desired and their own age, as we can see in Figure $3 .{ }^{6}$ Whereas Meetic users gain 10 years between age 18 and 28, the minimum age of the partners they seek only increases by 3.7 years (from 18.7 to 22.4 years old). At the other end of the spectrum, although a majority of men say they are open to the idea of a slightly older partner, they reject this idea more strongly after age 60. From that point onwards, only a minority of users (48\%) indicate an age range including older women.

These observations differ from the survey results. Figure 4 shows this clearly, presenting men's and women's attitudes towards a traditional age gap, as expressed in the "Epic" survey on the one hand, and as indicated on the Meetic website on the other. More precisely, the chart compares the proportion of respondents who said they would easily accept an unusual age gap in favor of the woman ( 5 years older) with the proportion of users who indicated a preference for such a gap in their profile. The difference is striking. Meetic users are clearly less open to an unusual age gap than survey respondents, and this is true for both genders. However, the discrepancy is larger for men. Whereas in a survey situation, men say they are relatively indifferent to the age of their partner-unlike women-this indifference disappears online. A majority of male users remain open to older women, up to around 40 years old, but after this age it is less and less the case. Women's declarations are

[^2]more coherent; the rate at which an unusual age gap is considered acceptable is relatively similar in both situations. The correlation coefficient is 0.73 for women, compared to only 0.24 for men.

Why this discrepancy for men and not for women? One possible explanation lies in women's and men's different levels of reflexivity regarding their sexual and romantic preferences, and the unequal dispositions for discussing them. While women are encouraged and accustomed to talking about intimate relations from a very early age (Monnot 2009; Ambjörnsson 2004) this is much less true for men, who often demonstrate a reticence to discuss their emotional life, particularly in the context of a survey (Blin 1997; Duret 1999). It could be that the Epic survey primarily captures these gendered attitudes towards discussing intimate subjects. This would mean that women's responses, which appear more categorical, do not reflect a more intransigent preference regarding the age of their partner, but above all a more conscious preference. Inversely, men's apparent indifference might have less to do with the age of their partner than with the question itself, which they perhaps have trouble responding to (or which they have trouble taking seriously). In any case, the Meetic data suggests that men, more than women, "do not always do what they say they do" and in this respect question survey data on couple formation. Indeed, the different gendered socialization with regard to both ways of talking about and experiencing intimate relationships calls into question the comparability of men's and women's responses to survey questions on sexuality and relationships.

## Gendered Paths towards the Age Gap

The age preferences declared in situ on online dating sites challenge the abstract declarations collected by surveys. However, the true originality of this new type of data lies in the interaction data, which enable us to see who is talking with whom online. The following analysis looks at contact behavior in relation to age, without necessarily assuming that this variable constitutes a criterion as such in partner choice. Indeed, there is no need to assume that age constitutes a "preference" in itself in order to look at interaction patterns with regard to this variable. It is precisely because it is closely associated with other social characteristics-of which it is often merely an indicator-that age structures romantic and sexual encounters. The observation of these encounters shows the various paths that lead to an average age gap between spouses.

Figure 4 - Rate at which an unusual age gap (5 years ormore) in favor of the woman is acceptable to respondents, on Meetic and in the "Epic"survey (\%)


> Note: In the "Epic" survey, $79 \%$ of men aged 50 affirmed that they would "easily accept the idea of being with someone 5 or more years older than them." On Meetic, $38 \%$ of profiles presenting men of the same age stated preferences for a partner 5 or more years older than themselves. Population: Active user accounts on Meetic in 2014; people living in metropolitan France. Source: Meetic.fr user database, Meetic Group, 2014; "Epic" survey, Ined-Insee, 2013-2014.

First, the analysis shows a difference between stated preferences and actual contact behavior online. In comparison to the age brackets indicated in the profiles, which are relatively broad, the contacts initiated on Meetic occur within a much narrower range. This means that the age difference between the sexes is reduced and is closer to the actual gap observed within couples. On the website, interactions between users are characterized by an average age gap of 2.4 years in favor of the man. In France, cohabiting relationships were characterized by an average age gap of 2.5 years in 2007 (Daguet 2016).

Similarly, just as the age gap between spouses varies depending on their age when the couple is formed, the age gap between online correspondents varies with the age of the sender. However, this variation is larger online than it is among existing couples. Table 1 presents the contact behavior on Meetic according to gender and age, showing the average age gap between correspondents according to whether the first email was sent by a female or a male user. The trends are the same as for the stated preferences. Young men contact both older and younger women. As they get older, however, they show an increasing interest in younger women: the age gap with their female correspondents declines from an average of 2.2 years in favor of the woman for 18 to 24 -year-olds, to an average of 7 years in favor of the man for 60 to 70 -year-olds. Among female users, the opposite is true. Young women generally contact older men, and this remains the case until they enter their forties (the average age gap is over 5 years in favor of the man among 18 to 39 -year-olds). After that, they also contact younger users (the average is nearly 4 years in favor of the woman among 60 to 70 -year-olds).

TABLE 1-Average age difference with online comespondents according to the gender and age of the sender

|  | Women | Men |
| :---: | :---: | :---: |
| $18-24$ years | 6.6 | 2.2 |
| $25-34$ years | 5.2 | -0.2 |
| $35-39$ years | 5.0 | -2.7 |
| $40-49$ years | 0.7 | -3.8 |
| $50-59$ years | -1.2 | -5.2 |
| $60-70$ years | -3.9 | -7.0 |

Note: The age difference between the sender and the receiver is on average 2.2 years in favor of the woman for emails sent by male users aged 18 to 24 .
Population: All initial contacts and replies sent on Meetic during 2014. Source: Meetic.fr user database, Meetic Group, 2014.

Both stated and demonstrated preferences indicate that the age gap is the result of different social processes. While the statistical strength of this social fact has led some to see it as a preference shared universally by both genders, empirical observation of age preferences suggest this is not the case. Sexual asymmetry in heterosexual couples corresponds to different mechanisms.

In the early stages of the sexual and romantic life course, it is indeed women who pursue a traditional age gap, as shown already by the work of Michel Bozon (1990a, 1990b). In addition to survey data, Bozon used interviews conducted in the 1980s and highlighted women's strong valorization of maturity in their partner. When forming their first unions, women turn away from peer relations and turn towards men who are already socially established and who demonstrate a certain economic and
residential independence (Bozon 1990b, 355, 1990a, 583). Here, maturity is not so much about the chronological age of the partners as their social age. "Mature" men are those who reassure with regard to their stable situation-unlike their peers-and thus convey a feeling of security, both practical and emotional.

Thirty years later, this valorization of male maturity persists among young women. Although recent decades are characterized by a remarkable social mobility among women-due to the increase in education level, participation in the labor market, and access to qualified employment and positions of responsibility-none of this seems to have had a significant impact on their vision of couple life. Young women continue to look for an older partner, as though their status within the couple had not changed in other respects. Yet, heterosexual relationships have been structurally altered by the increase in women's social status, particularly by the fact that women are now more highly educated than their male spouses (Bouchet-Valat 2015) and contribute more to the couple's revenue, thus decreasing wage-based inequality between partners (Bouchet-Valat 2017). It seems, as Sonia DayanHerzbrun affirmed (1982) that this economic independency among women has had little impact on their "emotional dependency" on men. The concept of emotional dependency refers to the "nonsymmetry of romantic feelings between men and women" that leads women to seek for recognition of their identity and value in love $(1982,120)$. They look to their spouse for support and security rather than for reciprocity, and thus turn to older men. What was true in the past is still true today. As the Meetic data suggest, the age difference that characterizes first unions is primarily due to women, because of the close association they seem to maintain between the figure of the spouse and that of the elder.

Yet the observations of the web data also reveal something else. Men actively participate in creating this asymmetry within couples as they get older. Unlike previous studies, which concluded that "agebased superiority of men is widely desired by women" (Bozon 1990a, 599), online contact patterns show that, among older users, it is in fact men who pursue the age gap in their favor. Contrary to the declarations registered in surveys-and even to the preferences they state in their online profilesmen aged 40 and above predominantly contact younger women and, in doing so, indicate a clear preference for a traditional age gap. If it is women's desire for male maturity that creates an age gap in first unions, how can we explain men's increasing interest in younger women?

The answer lies in women's and men's social ages that are not the same (Bozon 1990a, 1990b). Both ascribed age (attributed by others) and subjective age-feeling (too) young or (too) old-differ according to gender. Firstly, men "stay young" longer than women do. They enter couple and family life later and the age gap is a result of this difference in female and male trajectories (Bozon 1990b). But, unlike women, men also become "young again" after a break up. This is clear from qualitative research based on interviews with dating site users in France (Bergström 2015). As most women tend to have custody of children after a separation, they primarily consider forming a new couple as reforming a family. Their attitudes towards romantic relationships are both realistic and pragmatic, unlike both younger women and men their own age, who are much more idealistic. Because men only rarely have primary custody of their children after a separation, they have greater room for maneuver in "restarting" their lives. They are both objectively and subjectively more "free" and thus more likely to make a clean break from their first union and engage in a new one. Ready to make a new start, they often turn towards women who are "young as well" and likely to share their dreams and ambitions. These tendencies can be seen on Meetic. Most users over 40, both men (60\%) and women (68\%), declare they are separated or divorced and have children. However, this conjugal and parental experience has more influence on the preferences and practices of female users. When asked to

[^3]indicate in their profiles whether they want to have children or not, many separated women, who are already mothers, answer no. Between age 30 and $39,80 \%$ of female users reject the idea of a new child, compared to only $55 \%$ of male users in the same situation. Also, women's attitudes towards their partners' age change more depending on their past experiences. At a given age, the fact of being a parent and declaring oneself "separated" or "divorced" (rather than "never married" or without children) is, for women, associated with age preferences close to their own age, and with contacting men about the same age. The change in women's preferences with age is thus primarily due to changing attitudes after a separation. This is not the case for men whose parental and conjugal experiences have little impact on their preferences and contact patterns. Whether they are separated or not, parents or not, men feel young and contact women whom they identify as being so as well.

## Partner Choice Is Rarely a Choice

The apparent consistency of the age gap within heterosexual relationships is misleading. Different social processes lead up to this final result. This observation leads us to another. The age gap, and the formation of couples more generally, is the result of "bargaining." Although couples are generally represented-by novelists and sociologists alike-as the result of two reciprocal wills, the desires of women and men often diverge, and unions in fact tend to be more like a compromise than a perfect match.

Online dating is a perfect demonstration of this. Figure 5 confronts age preferences expressed by both genders at different ages. More precisely, it presents the contact behavior of men (indicated in blue on the $y$ axis) and women (indicated in red on the $x$ axis). Darker colors indicate a greater number of contacts. The dark blue areas indicate ages of women frequently contacted by men. The dark red areas correspond to ages of men frequently contacted by women. By overlapping the contact behavior of the two genders, the graph also shows where they meet; the purple areas highlight where female and male preferences coincide. Finally, the black diagonal line traces the intersection between the age of female and male users and shows a nil age gap. The right-hand side of the square therefore corresponds to an age gap in favor of the woman, while the left-hand side indicates a gap in favor of the man.

The graph illustrates observations already made above, such as a certain flexibility of age preferences, although they tend to cluster around the diagonal (indicating a preference for a partner close in age). We can also see the inversion in men's and women's attitudes towards the age gap that occurs between 35 and 40 years old. Up until this point, men contact older women relatively often, but the latter show little interest in them then. After 40 years old however, women more readily turn towards younger men who, in turn, begin to look for younger women. Characterized by different directions, the preferences of the two genders ultimately converge in a slight age gap in favor of the man. Indeed, the intersection of male and female contact behavior is situated just above the diagonal for women (demonstrating a positive age gap) and just below it for men (demonstrating a negative gap). The figure shows that men's and women's preferences point in different directions and tend to intersect at specific points more than they actually coincide. The age gap thus appears to be the result of the mutual adaptation of different aspirations.

Figure 5-Contact behavior according to gender and age


Note: On Meetic, female users aged 20 primarily contact men between 20 and 39 years old. 93\% of their emails are sent to men in this age bracket. Male users of the same age contact women aged 18 to 29 , who receive $92 \%$ of their emails.
Population: All initial contacts and replies on Meetic in 2014.
Source: Meetic.fr user database, Meetic Group, 2014.
These results challenge the concept of "partner choice" so dear to sociologists. Romantic and sexual encounters are complex processes made up of rejections and disappointments, and the couples that result from this do not only reflect choices, but also unmet desires. Surveys are blind to these prior compromises and concessions because they come into play only after the formation of the couple. They therefore facilitate the over-hasty understanding of unions as "revealed preferences." The empirical observation of dating provides another version of the story. It shows that partner matching happens halfway between women's and men's expressed preferences. Interaction is indeed established when both genders approach the desires of the other partner. The age gap therefore appears to be a negotiated gap. But how does this negotiation actually play out?

In order to answer this question, we need to look at conventions in seduction. Dating is a highly codified social practice and, as far as heterosexual couples are concerned, it follows a gendered script in which the two partners are encouraged to play different roles. One of the main organizing principles of this scenario is that of male initiation. In dating, men are expected to make the first move and to take the lead. This principle also structures online dating. Contrary to what is sometimes stated in the media, the internet has not revolutionized heterosexual dating. As we can see in Figure 6, interactions are deeply gendered: $90 \%$ of first contacts are initiated by men, while $77 \%$ of replies are sent by women. In other words, he writes, and she responds... sometimes. In fact, behind the first trend lies another-men contact a lot of women and receive few replies. On average, less than one email in five receives a response, some $16 \%$ of male attempts at contact, and $44 \%$ of female attempts.

Figure 6-Sex-ratio of users sending first contacts and those who reply


Note: $90 \%$ of first attempts at contact on Meetic in 2014 (between users of different genders) were initiated by men (some 19 million emails). Of the replies, $77 \%$ were sent by women (some 3 million emails).
Population: All first contacts and first replies on Meetic in 2014.
Source: Meetic.fr user database, Meetic Group, 2014.
This gender difference in contact behavior is not due to an unequal interest in making new encounters, as sometimes suggested. Rather it reflects a differentialist vision of male sexuality, associated with a more ardent desire, and female sexuality, seen as being more subdued. This frequent representation (Bajos et al. 2008) also operates as a norm. As Isabelle Clair shows in her studies on young people, girls are not supposed to "desire to the same extent" as boys (2007, 2012, 73). They are expected to be more reserved in their interactions with men; if they are not, they risk both their sexual reputation and possibly also their physical integrity (Bergström 2012). Thus, women often wait for men to make the first move, both online and offline. Whereas in ordinary social settings, the first encounter may be unplanned, the second encounter is often initiated by men. That is what the Epic survey shows, asking people in a relationship which one of them made the effort to see the other person again after the first contact. Both female and male respondents agreed that it was most often the man that had taken this initiative ( $42 \%$ of men and $49 \%$ of women said this) and more rarely the woman ( $22 \%$ of men and $17 \%$ of women), or both partners together (23\%). In other words, male initiative is not specific to the internet.

The age gap is therefore the result of an interaction where the two genders play very different roles. This process takes the form of a negotiation where men make proposals amended by women. Through their responses, and especially their non-responses, female users moderate the aspirations of men to bring them more into line with their own. Among young women, this consists in ignoring contacts from their own age group-young men have the lowest response rate on Meetic, only $12 \%$ of emails sent by 18 to 24 -year-olds receive a response, compared to $30 \%$ of emails sent by 50 to 59 -year-olds, for example. Older women have a slightly different strategy. They are more likely to respond to men their own age, but they also sometimes take the initiative themselves. This is particularly the case for older women who are ignored by men their own age (who are interested in younger women) and who often break the norm of feminine reserve in order to directly contact the partners they find pleasing. While only $17 \%$ of contacts involving female users aged 18 to 24 are initiated by the woman, this figure rises to 58\% for interactions involving women aged 60 to 70.

This norm of male initiative deprives women of a significant lever of power. By allowing men to act first, they deprive themselves of the control over which interactions are initiated. This ultimately seems to work to their disadvantage. We can see this when we compare the age preferences stated by female users in their profiles, with the age differences in contacts actually initiated on Meetic (Figure 7). As stated above, the age gap between correspondents falls somewhere in between
women's and men's preferences, and so suggests a compromise. However, this compromise is much closer to the initial male preferences. This means that the interactions that start online reflect the age criteria of male users more than those of female users. Although the gender roles in heterosexual dating are often presented as benefiting women-as the saying goes "the man proposes, the woman disposes" - in reality this is not the case. Because men send more emails and because they make the first move, they play a more important role in the gendered negotiation around the age gap. Often laborious and less flattering, the role of the initiator nevertheless pays off.

Figure 7-Average age gap in favor of the man, as requested in user profiles and observed in contacts



#### Abstract

Note: Profiles of women aged 55 state a preference for an average age gap of 0.1 year in favour of the woman, whilst profiles of men the same age indicate a preferred age gap of 4.9 years in favour of the man. The actual average age gap observed in first contacts, for senders aged 55 years old, is 2.7 years. Population: Active user accounts on Meetic in 2014; all first contacts having received a reply on Meetic in 2014. Source: Meetic.fr user database, Meetic Group, 2014.


Partner choice is rarely a choice. This has been shown by studies on homogamy, which emphasize the structural role of meeting venues on couple formation (Blau 1994; Blossfeld and Timm 2003). Bozon and Héran (1987, 968), for example, highlight that the fact that we "do not marry just anyone [...] is largely due to the fact that we do not 'choose' just any place to meet our spouse." The authors therefore suggest a change of vocabulary, referring to the "discovery" of a spouse rather than a choice. The age differences observed within couples encourage us to go further. Indeed, beyond the question of meeting venues, romantic and sexual encounters are not only a question of preferences, as often claimed. Dating is based on an interaction between the genders where often-divergent desires are confronted and where concessions, renunciations, and compromises are frequent. Regarding the age gap, the observations from the Meetic website suggest that it is less a result of reciprocal preferences than a meeting point between female and male desires that otherwise diverge. The age gap reflects not only gendered socializations and expectations with regard to couple formation, but also the transformation of these attitudes with age. On this point, the study shows the active participation of men in creating this age asymmetry within couples. While the existing literature insists above all on young women's attachment to the idea of an older partner, the Meetic data suggests that men-
contrary to what they say in the surveys-are by no means indifferent to the age of their partners but in fact are the primary defendants of a traditional age gap as they get older. Far from being a choice, but more than a simple discovery, couple formation is a negotiation between diverging expectations.

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[^0]:    ${ }^{1}$ There are several types of subscription available, with services ranging from $9.99 €$ to $19.99 €$ per month for six months.
    ${ }^{2}$ Source: "Epic" survey, Ined-Insee, 2013-2014; Population: individuals living in metropolitan France, aged 26 to 65 years old.
    ${ }^{3}$ Source: "Epic" survey, Ined-Insee, 2013-2014. Population: individuals living in metropolitan France, aged 26 to 65 years old, who were in a couple at the time of the study.

[^1]:    ${ }^{4}$ Heterosexual dating sites rarely ask users what "type" of relationship they are looking for, and if they do, both the question and the default answers are prudish in their wording. Meetic thus asks users whether they are "available for a relationship at the moment," which most users reply to with "That is what I'm looking for" (46\% of female users and $48 \%$ of male users), while roughly one third choose the "let's leave it to chance" option ( $34 \%$ and $38 \%$ respectively) and still others choose not to respond ( $15 \%$ and $16 \%$ ). These responses are in no way indicative of the actual nature of the relations that follow.
    ${ }^{5}$ We can see this particularly in the "Context of Sexuality in France" (CSF) study, which asks respondents about their last sexual relationship and allows us to compare partners according to whether they are cohabiting spouses or "regular," "primary," "occasional," or "new" sexual partners. All other things being equal, the age gap does not vary much between "type" of partners. Source: CSF Study, Inserm-Ined, 2006.

[^2]:    ${ }^{6}$ There are limits to the age gap however. Although users can broaden their age range preferences to the maximum - and although sociobiology suggests that men are interested in younger women at all stages of lifeonly a minority of male users select an age range that includes women 15 or more years younger than themselves (8\%). Similarly, as we will see, contacting much younger women is rare.

[^3]:    ${ }^{7}$ In France, the mother has sole custody of the children in 76\% of cases and the father in only $9 \%$ of cases after a divorce (Bonnet et al. 2015).

