

# **Do women prefer longer conversations? Evidence of communication preferences from commercial and private telephone use<sup>1</sup>**

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This version: June 17<sup>th</sup> 2009

## **Abstract**

We investigate whether there are systematic differences in communication behavior between men and women of a kind that could affect their propensity to form strong versus weak social ties. We also investigate whether such differences result from different preferences rather than from different constraints or simply from different habits. We report two sources of evidence on telephone usage, to test the hypothesis that women prefer to communicate with fewer partners but prefer to spend more time with each. First, we report a study of anonymized billing records of a random sample of 3103 subscribers to a large mobile operator in Italy and Greece over two years from 2006 to 2008. This shows that, when faced with identical tariffs, men and women have different calling patterns, with women making fewer but longer calls than men on average. Calls made by women are around 16% longer on average when other factors are controlled for. The findings are highly statistically significant and are found across all age groups in both countries. Secondly, we report a study of some 92,000 person-days of calls to call center employees of a large consumer services company operator at four sites in Germany. Calls received by women employees last around 15% longer than those of men when other factors are controlled for. Again the findings are highly statistically significant and are found across all age groups. The random allocation of incoming calls to employees makes it extremely unlikely that this is due to differences in calling incentives or opportunities. We also show that these gender differences are weaker when communication costs are high, which suggests that they represent different preferences for calling behavior rather than ingrained habits. Our data are silent on whether such differences are innate or are due to early socialization of boys and girls. We discuss possible implications for other aspects of gender differences in social life, including clustering by gender in the labor market.

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<sup>1</sup> The authors are grateful to Nicoletta Berardi, Michael Kosfeld, Jonathan Sandbach, Neele Siemer and Levent Yilmaz for comments, help and advice. The usual disclaimer applies.

## Introduction

The question whether men and women have different underlying preferences for social relationships has been the subject of intense academic interest as well as lay curiosity. It has proved difficult to find clear evidence about this, since observed social behavior is determined both by preferences and by constraints. It is hard to know whether observed differences in behavior between men and women are really a reflection of differences in their underlying preferences or reflect merely the differences in their opportunities. In this paper we contribute evidence from telephone use which strongly suggests that differences in underlying preferences are indeed involved. We show, using call duration data from three countries and two distinct social settings, that women make longer telephone calls on average than men do, even when we control as far as possible for differences in the constraints on their telephone use. This corroborates evidence from other sources that women have preferences that lead them to invest in a smaller number of social ties, and to invest more in each tie, than men do. This does not imply that women necessarily have different preferences than men over the social ties that result from this behavior, though it is consistent with such a hypothesis. But it does imply at least that women have different preferences for types of communicative behavior, and that the social ties in which they invest are the systematic outcome of these types of communicative behavior.

We develop our argument in two steps. First, we investigate whether, on average, women communicate differently from men – specifically, making fewer communications each one of which lasts longer - when the constraints they face on their communication choices are the same as those of men. We conclude that they do. Secondly, we investigate whether the differences in communication behavior we find are essentially habits – ingrained differences in behavior that persist across a wide range of contexts and circumstances – or whether instead they reflect different preferences and assessments of the benefits of communication, which might therefore result in behavior that varies according to the costs of such communication. We show that preferences are indeed involved: when the costs of such differences in communication are high the differences disappear, though the differences are marked when the costs are low.

Forming social ties, and using these ties to build coalitions and networks of social alliances, is central to the behavior of all group living primates (1). It is well known that there are gender differences in the way such social ties are formed in non-human primates, and it has long been conjectured that there may be similarities in such gender differences between humans and non-human primates (2). In non-human primates coalitions among males form for different reasons from coalitions among females, and this gives them typically different size, purpose and duration (3-7). The primatologist Frans de Waal reports a study of chimpanzees in captivity in which explicit reconciliations occurred after 47% of conflicts between males but after only 18% of the much rarer conflicts between females (8). He also reports that fewer male than female interventions in third party conflicts were in support of

close allies, and concludes that as a result male coalitions are more opportunistic, strategic and flexible while female coalitions are more loyal and stable, but less likely to respond to new foraging opportunities. In the terminology due to the sociologist Mark Granovetter (9) males seem to invest in social networks with relatively more “weak ties” while females invest in those with a larger proportion of “strong ties”.

There is considerable scientific interest in whether human social behavior displays similar gender differences, and if so in the direction of causality involved(10). There is a range of experimental data suggesting that men and women display different coalition-formation behavior in laboratory settings (11), as well as different preferences as between more and less competitive interactions (12). Outside the laboratory there is evidence from surveys that men and women may display differences in the use of communications technologies such as mobile phones (13), as well as other evidence about clustering in social behavior resulting from different behavior patterns (14). However, these surveys mostly rely on self-reported behavior and many fewer studies to date have investigated more objective evidence such as telephone billing records (15).

It is not easy to interpret such findings, and in particular to know to what extent the causality runs a) from the different economic and other opportunities open to female coalitions to the behavior of individuals within them, as opposed to b) from the behavior of individuals to the capacity of coalitions to respond to the economic and other opportunities available to them. There is no dispute that different economic opportunities open to women (such as their lesser representation at board level in major companies (16)) are likely to diminish their opportunities for networking both with men and with other women. What is more interesting but harder to investigate is the possibility that independent differences in their networking behavior may act as constraints on their economic opportunities.

There is abundant evidence for the importance of sex-related endocrine responses in mediating human social behavior (17). To date, however, there is more limited quantitative evidence for the influence of sex-related endocrine responses on social behavior in economic settings – in laboratory studies of auction bidding (18) and in studies of endocrine influence on market trading behavior (19). More generally, the laboratory studies referred to above seek to control for extraneous economic factors so as to focus on underlying preferences in their subjects. However, the artificiality of the laboratory settings suggests the need to seek further evidence outside the laboratory, where the challenge of controlling for different sex-related constraints is severe. It is this challenge that motivates the studies we report in this paper.

Finally, if indeed there are systematic gender differences in preferences for social behavior, the evidence is mostly silent as to the origin of such differences, and in particular whether they are biologically hard-wired or are the result of early socialization of girls (20). In addition, the evidence is mostly silent on the extent to which the gendered character of social ties created as a result of behavior are directly intended by the individuals concerned, and to what extent they emerge as the unintentional consequence of gendered patterns of behavior.

## Our data and methods

We report here call duration data from two studies of telephone use, one based on a random sample of mobile phone users in Italy and Greece, and the other based on a study of call-centre employees in several centers run by a large consumer services company in Germany. The approach in each study complements that of the other.

An ideal dataset for our purposes would be one that a) sampled men and women randomly so as to ensure that they were representative of the general population, and b) ensured that men and women faced identical constraints on their calling behavior, including not only the costs of calling but also the set of types of call they could make. Unfortunately no such dataset exists as far as we are aware, and no such dataset is likely to exist. The reason is that, so long as occupational choice is voluntary, any setting in which men and women are subjected to identical sets of constraints will involve a decision to select into participation rather than a procedure of random sampling, and may therefore involve differences in the extent to which the two sample groups are representative of their respective populations. Conversely, any situation involving random sampling will be unable to ensure that constraints are identical between the sexes; men and women will be included whether their constraints are identical or not. The solution we have adopted is to use two datasets, one of which involves conditions close to random sampling while the other imposes identical constraints on the participants, and to compare the results.

The near-random sample is a study of mobile phone users that reports actual billing data over two years from the summer of 2006 to the summer of 2008 for 3103 subscribers, of whom 1964 are in Italy and the remaining 1139 are in Greece. A total of 828 (42%) of the Italian subscribers and 493 (43%) of the Greek subscribers are women. The study is based on a random sample of the population of subscribers to one of the operators in each country (21), and is therefore likely to represent something close to a random sample of men and women in the countries concerned since mobile phone penetration is high (22). Men and women in each country face identical tariffs (they may have different calling plans but if so these result from their own choices rather than from different prior constraints). We control for the age of the caller in presenting descriptive statistics as well as in the regression analysis. Evidently callers face different personal circumstances that will typically shape the constraints on their calling behavior. In the regression analysis we control partially for this by using total monthly bills as a proxy for their ability to pay for calls. Since this is likely to be endogenous to calling preferences we use an instrumental variables technique with the number of years that the individual has been a mobile phone subscriber as an instrumental variable. This is likely to reflect differences in ability of pay for calls but not to be otherwise related to preferences for call duration.

We cannot of course exclude by these techniques the possible influences on calling behavior exerted by individuals' existing networks of contacts; this is what we mean by the continuing differences in constraints. This is what motivates our second study, of calling behavior by employees of four call-centers in Germany belonging to a large consumer services company. The call centers provide various services. We focus on 491 individuals who work on related services, providing information and carrying out sales, logged over the period of May 2007 to December 2008. In total, there are 92,836 observations. Each observation consists of the number and duration of calls of a certain type performed by a single agent in a single day.

Unlike our mobile phone study this is not a random sample of the population. However, calls made by call-center employees are initiated by customers of the company and are routed by a computer system to employees without reference to the sex of the employee. Employees are under a range of constraints due to the nature of the job. Most importantly, it is the policy of the firm to provide targets, both in terms of sales and average call duration. Lengthy calls are costly to agents, because low performance triggers control and pressure by supervisors, and may involve unattractive additional training, lower chances for promotion and so forth. These constraints on employee calling behavior are identical for men and women.

In our regressions, we control for the fact that different call types may require different investments of time by the employees; for an array of personal characteristics, in particular, for gender, age and location. We also control for times of the shift, week days and months.

To summarize, our mobile phone study has the advantage of approximating closely a random sample of men and women in the countries concerned. The call-center study has the advantage of excluding systematic differences between men and women in the constraints on their calling behavior, but is a sample of individuals self-selected by their willingness to work in a particular type of employment. Neither study is ideal but each has virtues that complement those of the other. It is therefore very encouraging that the results of the two studies are remarkably similar.

## **Results: descriptive statistics**

Figures 1 and 2 show the gender difference in the average duration and average number of mobile phone calls made by subscribers in Italy and Greece. We do not have data on individual calls so the duration numbers are based on the monthly per-subscriber average call duration. Figure 1 shows that in every age category and in both countries women make longer calls than men, by an average of 19% for the whole sample. These differences, which are particularly marked in the 20-30 age group, are all statistically significant at less than 1%. Figure 2 shows that this is not the result of generally greater mobile phone use: in every age

category except that of Italian women in their fifties, women make fewer calls than men. So women are making fewer calls but are putting more time into each call(23).

Two qualifications should be noted. First, we do not have information about the number of distinct individuals called by each subject of the study, only about the number of calls made. We cannot therefore distinguish between the hypotheses that women are calling fewer individuals and that they are calling the same individuals less frequently.

Secondly, there is an important difference in both average call duration and average monthly call numbers between Italy and Greece. This difference is important enough that the average Greek woman makes more calls, and of shorter duration, than those of the average Italian man. These differences may be due to pure differences in tariff structures, which typically differ from one country to another. However, we cannot rule out the influence of cultural factors, which might therefore also influence gender differences.

Figure 3 shows the difference in average call duration by gender for call center employees in Germany, once again classified by age. Once again in every age category women make longer calls than men, by an average of around 11% for the whole sample. It is interesting to note that the difference is again largest in the 20-30 age group, where it reaches nearly 26%.

It should be noted that in both studies we are able to record only the gender of the subject, and not the gender of the called party. It seems likely that a significant proportion of calls made by men will be to women and a significant proportion of calls made by women will be to men. Since for each such call, by definition, the duration of the call for the woman is the same as the duration of the call for the man, it follows that the difference between the average duration of calls made by women to women and the average duration of calls made by men to men will be greater than the difference reported in our data. To illustrate, suppose that men call each other with an average duration of one minute per call, and women call each other the same number of times with an average duration of two minutes per call; the mean difference in call duration is 100%. In addition suppose that each man makes the same number of calls to women, with an average duration of one and a half minutes per call. Then the average call duration for men, for all calls, is one and a quarter minutes and the average duration for women is one and three quarter minutes, making a mean difference in measured duration of only 40%. We should therefore expect that the duration of calls between women will exceed the duration of calls between men to a substantially greater extent than the gender differences reported in our data, though to a degree we cannot estimate since we do not know the proportion of calls made between men and women.

## Results: regression analysis

Table 1 reports the results of a regression analysis of the logarithm of call duration on a number of explanatory variables including gender, country, age and time, using data from the mobile phone study. The logarithmic specification means that the coefficients on the various explanatory variables can be interpreted as proportionate effects. There are 71652 observations, representing 24 monthly observations from 3103 subjects.

The first column of Table 1 shows the estimation without controlling for total monthly spending. The time trend is positive at 0.6% increase per month over the study. As expected from the descriptive figures, there is a strong national effect, with Italians talking for 36% longer on average than Greeks. Women talk on average for 9.7% longer than men; this effect has a t-ratio of nearly 5 meaning that it is statistically significant at a tiny fraction of 1%. T-ratios are calculated using clustering on individuals, to allow for the fact that different monthly observations for the same individual are not entirely independent but are influenced by factors common to that individual.

The second column of Table 1 controls for each individual's total monthly spend in order to take into account that women may not have the same average ability to pay as men. Not surprisingly, since women spend less on average than men, when this is taken into account the greater duration of women's calls increases, to 11.2%. However, using monthly spend as a measure of individuals' ability to pay is not appropriate, since it will itself be influenced by individual preferences and not just by ability to pay; it will therefore lead to biased parameter estimates. Accordingly we report in the final column of Table 1 estimates based on a two-stage instrumental variables approach. We use the number of years for which the individual has been a subscriber as an instrument for monthly spend, since this is likely to be related to ability to pay but not otherwise to preferences for call duration as against greater numbers of calls within an overall monthly budget. We verify using a Hansen test of over-identifying restrictions that the instrumental variable is indeed correctly excluded from the second stage of the estimation. When we do this our estimate of the gender difference increases again, to 16.2% (24).

Table 2 reports estimates of the determinants of the log of call duration, using the data in the call center study. We control for the type of call, for age and length of experience of the employee, for the particular call center and also for fixed effects of shifts, days of the week and months of the year. We also control for a certain proportion of employees who are public servants and who are remunerated on different types of contract from the others. We do not control for income, partly because we do not have such data but chiefly because the employees are not paying for the calls. When all these factors are taken into account the effect of gender on call duration is very clear: women make calls that last on average 14.9% longer. This effect is remarkably similar to the effect we have estimated in the mobile phone study.

It should be noted that the longer calls made by women imply nothing about whether they are, on average, more or less effective employees than men. On average women in fact make slightly more sales per shift than men, which might suggest they are more effective on average (a hypothesis consistent with the observation that talented women may face greater obstacles in other kinds of work). However, making sales is not the only criterion of effectiveness(25).

## **Habits or Preferences?**

The behavioral differences we have uncovered could in principle result from habits that simply incline men and women to communicate in different ways without their perceiving at all differently the benefits from doing so. Alternatively they might represent differences in preferences – that is, a different perception of the benefits from communication. How could we tell the difference between these two explanations? The answer is that differences in perceived benefits will result in important differences of behavior provided the costs of communication are low; they are less likely to do so if the costs of communication are high. Ingrained habits, in contrast, can be expected to be relatively insensitive to such variations in costs.

Our data allow us investigate this question in two ways. First, the data in the mobile phone study allow us to distinguish between incoming and outgoing calls. Many calls to mobiles are made from fixed lines, which face lower tariffs in general and some of which in addition are professional lines whose bills are not paid by the caller. The cost per minute to the caller of a call *to* a mobile phone is therefore on average significantly lower than the cost per minute to the caller of a call *from* a mobile phone. This should lead us to expect outgoing calls to have shorter duration than incoming calls. In addition, if calling behavior is preference- rather than habit-based, we should expect gender differences in call duration to be stronger for incoming calls than for outgoing calls. If it is habit-based we should see no such difference.

Our second source of evidence is from the call-center study. The firm in question faced a large and damaging strike during the time for which we have data. It put in place a hotline designed to inform its customers of the latest situation with respect to the strike. This hotline was heavily subscribed. Employees operating the hotline were aware that for customers affected by the strike the hotline was the only reliable source of information. Management gave absolute priority to calls in the strike hotline, and gave much stricter instructions than usual about the need to deliver information rapidly and effectively in a minimum of time. In other words, the costs to the employees of time spent on communication were much higher than was normally perceived for their activities in the call center. This

hypothesis is confirmed by the fact that the coefficient on the control variable for calls to the strike hotline in Table 2 is strongly negative (these calls lasted on average 37.5% less long than other calls). If gender differences in communication are preference-based we should therefore expect to see much smaller gender differences in calling behavior on the strike hotline than elsewhere in the call center; remaining differences should reflect ability rather than preferences. If differences are instead habit-based we should expect to see roughly similar gender differences on the strike hotline as elsewhere.

Table 3 shows the determinants of mobile call duration distinguishing between incoming and outgoing calls. As conjectured outgoing calls have shorter duration and there is a strong and highly significant difference between the gender coefficient on incoming and outgoing calls. In the basic specification the gender coefficient on outgoing calls is no longer statistically significant – that is, we cannot reject at 5% confidence the hypothesis that there is no difference between men and women in the duration of their outgoing calls, for which they face higher costs. In our preferred instrumental variables specification, however, there is still a highly significant gender effect for outgoing calls, but it is only around half as strong as for incoming calls. Outgoing calls made by women are 10.5% longer than those made by men, while incoming calls to women are 21% longer than those made to men.

Table 4 shows the determinants of call center call duration on the strike hotline. The gender effect has in fact turned negative: calls to female employees on the strike hotline last 6% *less* long than those to men (though this is more weakly significant, at a little under 10%). As we conjectured, once the costs of differences in preferences become important, those differences disappear; the negative coefficient on calls to women may reflect a slightly greater effectiveness of female employees, which would be consistent with the evidence on sales reported above.

We conclude that both of these datasets support the view that the behavioral differences they reveal between men and women reflect differences in preferences and not simply differences in relatively inflexible habits.

## **Discussion and conclusions**

Our mobile phone data show that, when faced with identical tariffs, men and women have different calling patterns, with women making fewer but longer calls than men on average. Calls made by women are around 16% longer on average when other factors are controlled for. Since some calls made by women are to men and vice versa, this implies a difference in duration of women's calls to women compared to men's calls to men that is well above 16%. Although in measuring this effect we cannot control for unobserved differences in calling incentives or opportunities, our data on call center behavior show a very similar pattern in call duration, with calls to female employees lasting around 15% longer than those

to men when other factors are controlled for. The random allocation of incoming calls to employees makes it extremely unlikely that this is due to differences in calling incentives or opportunities.

The fact that the gender differences we observe are sensitive to the likely costs of communication supports the hypothesis that they are due to preferences for different types of communication behavior, rather than simply to ingrained and relatively inflexible habits.

However, our results imply nothing about the origins of such differences in preferences. In particular, they say nothing about whether they may be innate, or acquired in the early processes of socialization of boys and girls. Nevertheless, the robustness of the findings across all age groups and across three countries suggests that this is a very widespread and substantial phenomenon that may have implications for other kinds of gender difference in social behavior.

What implications might there be? The work of de Waal (8) suggests that differences in coalition structure in primates may translate into differential responsiveness to economic opportunities. In human beings, many economic opportunities, beginning with those in the labor market, are ones that individuals come to learn about through their social networks. Many jobs, particularly those in high-status occupations, are ones to which individuals are recruited by at least partly informal means. Even if a formal interviewing procedure is in place, the process by which individuals come to be on the short-list for interview often owes a great deal to word-of-mouth recommendation based on personal acquaintance. Since the work of Granovetter (9) it has seemed likely that networks composed of relatively more weak ties may be more effective at transmitting information about job opportunities to their members. If women are indeed likely to prefer networks with more strong ties, this may have unanticipated costs to them that may contribute to explaining why women continue to be under-represented in a number of high-status occupations.

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Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society”, [www.fieldexperiments.com/uploads/Gender\\_in\\_Competition\\_Matrilineal\\_Patriarchal.pdf](http://www.fieldexperiments.com/uploads/Gender_in_Competition_Matrilineal_Patriarchal.pdf), questions whether such effects are innate or culturally acquired. As we discuss, the question of the origin of such gender differences is separate from the questions investigated here.

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23. We cannot report the average whole-sample duration for reasons of commercial confidentiality.
24. Similar estimations for average call numbers indicate that women make 8.1% fewer calls on average when ability to pay is controlled for.
25. Women make 8.8 sales per shift compared to 8.3 for men. However, only around 1 call in 8 results in a sale, and for many calls it is clear that making a purchase is not the purpose of the call.

**TABLE 1: Regression of Logarithm of Average Duration of  
Mobile Calls on Various Caller Characteristics**

Variable		<b>Basic Spec.: Ordinary Least Squares</b>	<b>Controlling for Total Monthly Spend</b>	<b>Instrumental Variables</b>
Female	Coefficient	9.7%***	11.2%***	16.2%***
	(t-ratio)	(4.98)	(6.17)	(5.84)
Age category	Twenties	17.6%***	14.6%***	5.1%***
	(t-ratio)	(5.85)	(5.10)	(1.23)
(omitted category: Forties)	Thirties	10.5%***	8.1%***	excluded
	(t-ratio)	(4.33)	(3.62)	excluded
	Fifties	-3.4%*	-4.4%*	-6.4%*
	(t-ratio)	(-1.27)	(-1.71)	(-1.76)
Month	Coefficient	0.60%***	0.62%***	0.65%***
	(t-ratio)	(13.03)	(13.74)	(10.52)
Italy	Coefficient	36.4%***	42.9%***	63.4%***
	(t-ratio)	(19.73)	(24.59)	(11.49)
Total Monthly Spend	Coefficient	Omitted	16.2%***	64.0%***
	(t-ratio)	Omitted	(27.59)	(5.53)
R <sup>2</sup>		7.4%	16.6%	64.2%
Hansen J-test of overidentification				0.00 (pr=0.99)
Number of observations		72772	72772	71652
Number of individuals (subscribers)		3103	3103	3103

Note: each observation is the average duration of calls in one month made by a subscriber; there are twenty-four observations per subscriber. Robust t-statistics in parentheses, with clustering on individuals. Statistical significance: \*p<0.05, \*\*p<0.01, \*\*\* p<0.001

**TABLE 2: DETERMINANTS OF AVERAGE CALL CENTER CALL DURATION IN LOGARITHMS,  
ALL TYPES OF CALLS (QUEUES)**

	<b>Gender plus basic controls</b>	<b>Gender plus personal controls</b>	<b>Adding call queues</b>
Female	15.5%*** (2.85)	13.9%*** (2.70)	14.9%*** (3.12)
Age 20-30		-31.0%*** (-5.23)	-33.2%*** (-6.09)
Age 30-40		-13.4%*** (-2.74)	-14.0%*** (-3.08)
Age 50-60		3.5% (0.80)	3.8%*** (0.93)
Years' experience		-1.94%*** (-3.34)	-2.17%*** (-3.97)
Booking queue			35.5%*** (10.17)
Overseas call queue			69.3%*** (13.28)
English language queue			44.5%*** (4.10)
Overseas English queue			76.5%*** (7.56)
Strike hotline queue			-37.5%*** (-9.49)
Constant	4.49*** (42.43)	4.77*** (37.28)	4.93*** (44.82)
R-squared	7.9%	13.6%	23.7%
No. observations	92836	92836	92836
No. individuals	453	453	453

The results reported are for an OLS regression; the dependent variable is the logarithm of average call duration of a single agent over all types of calls during one shift. Queue regressors are the proportion of time spent in each queue. Main omitted age category is 40-50; main omitted queue category is inland enquiries. Controls not reported are times of shift, week days and weeks of the year. Location is also included with personal but not basic controls (there are four sites) as is a control for type of contract (permanent versus temporary); none of these regressors is statistically significant. Robust t-values in parentheses, clustering on individuals. Statistical significance: \*p<0.10, \*\*p<0.05, \*\*\* p<0.001.

**TABLE 3: REGRESSION OF LOGARITHM OF AVERAGE DURATION OF INCOMING AND OUTGOING MOBILE CALLS ON VARIOUS CALLER CHARACTERISTICS**

Variable		Basic Spec.: Ordinary Least Squares	Controlling for Total Monthly Spend	Instrumental Variables
Female (Incoming Call)	Coefficient	11.7%***	14.0%***	21.4%***
	(t-ratio)	(5.75)	(7.17)	(5.81)
Female (Outgoing Call)	Coefficient	3.0%	4.8%**	10.5%***
	(t-ratio)	(1.30)	(2.30)	(3.20)
Average Outgoing Call	Coefficient	-13.7%***	-12.6%***	-7.8%***
	(t-ratio)	(-11.06)	(-10.33)	(-3.96)
Age category (omitted category: Forties)	Twenties	14.8%***	11.2%***	0.3%
	(t-ratio)	(4.92)	(3.99)	(0.06)
	Thirties	10.3%***	7.7%***	excluded
	(t-ratio)	(4.36)	(3.61)	excluded
	Fifties	-4.0%	-4.8%**	-6.3%
	(t-ratio)	(-1.51)	(-1.97)	(-1.58)
Month	Coefficient	0.29%***	0.31%***	0.36%***
	(t-ratio)	(6.20)	(6.80)	(5.17)
Italy	Coefficient	38.9%***	46.1%***	63.4%***
	(t-ratio)	(21.01)	(27.24)	(11.49)
Total Monthly Spend	Coefficient	Omitted	19.1%***	69.2%***
	(t-ratio)	Omitted	(33.15)	(10.51)
R <sup>2</sup>		7.6%	17.6%	59.0%
Hansen J-test of overidentification				0.08 (pr=0.78)
Number of observations		133778	132502	132502
Number of individuals (subscribers)		3103	3103	3103

Note: each observation is the average duration of either incoming or outgoing calls in one month made by a subscriber; there are forty-eight observations per subscriber. Robust t-statistics in parentheses, with clustering on individuals. Statistical significance: \*p<0.05, \*\*p<0.01, \*\*\* p<0.001

**TABLE 4: DETERMINANTS OF AVERAGE CALL CENTER CALL DURATION IN LOGARITHMS,  
STRIKE HOTLINE ONLY**

	Gender plus basic controls	Gender plus personal controls
Female	-5.5% (-1.64)	-6.1%* (-1.73)
Age 20-30		-6.6%* (-1.68)
Age 30-40		-8.1%** (-2.25)
Age 50-60		-2.5% (-0.70)
Years' experience		-0.2% (-0.50)
Constant	2.64*** (63.87)	3.263*** (33.542)
R-squared	17.3%	17.7%
N	14095	14095
	426	426

The results reported are for an OLS regression; the dependent variable is the logarithm of average call duration of a single agent over all types of calls during one shift. Main omitted age category is 40-50. Controls not reported are times of shift, week days and weeks of the year. Location is also included with personal but not basic controls (there are four sites) as is a control for type of contract (permanent versus temporary); none of these regressors is statistically significant. Robust t-values in parentheses, clustering on individuals. Statistical significance: \*p<0.10, \*\*p<0.05, \*\*\* p<0.001.