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The effect of obesity on salaries and gender differences. An experimental approach

Economic History and Development.

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Abstract:

Productivity is considered an important factor affecting the wage-setting process. Nevertheless, other factors such as gender and physical form play an essential role. In this dissertation, we adopt an experimental approach to research into the acceptance of a negative return of obesity on wages. Discrimination related to gender and obesity strongly affects salaries and many times acquire a similar impact to other factors as education or training. This research examines how people accept physical-form based differences in wages. The investigation is based on the online delivery of a survey in an experimental setting in which the participants, who act as wage setters, face different situations about salary evaluation. The treatment is the sex on the subject they have to select for a high or low position. Our study shows how there is great acceptance of discrimination regarding the physical form of the worker. Likewise, our estimates show that even without perceiving general differences in the cost of obesity by gender, there exist significant differences in the effect of these factors by job positions. The penalty would be greater for women in high positions such as IBEX35 than for men in these positions. This research contributes to the study of wage discrimination based on the physical form, and their acceptance in the society.

La productividad se considera un factor importante que afecta al proceso de fijación de salarios. Sin embargo, otros factores como el género y la forma física juegan un papel esencial. En esta disertación, adoptamos un enfoque experimental para investigar la aceptación de un retorno negativo de la obesidad en los salarios. La discriminación relacionada con el género y la obesidad afecta fuertemente los salarios y muchas veces adquiere un impacto similar a otros factores como la educación o la capacitación. Esta investigación examina cómo las personas aceptan las diferencias salariales basadas en la forma física. La investigación se basa en la entrega online de una encuesta en un entorno experimental en el que los participantes, que actúan como establecedores de salarios, se enfrentan a diferentes situaciones sobre la evaluación salarial. El tratamiento es el sexo sobre el tema que tienen que seleccionar, para una posición alta o baja. Nuestro estudio muestra cómo hay una gran aceptación de la discriminación con respecto a la forma física del trabajador. Del mismo modo, nuestras estimaciones muestran que incluso sin percibir diferencias generales en el costo de la obesidad por género, existen diferencias significativas en el efecto de estos factores por puestos de trabajo. La penalización sería mayor para las mujeres en puestos altos como IBEX35 que para los hombres en estos puestos. Esta investigación contribuye al estudio de la discriminación salarial basada en la forma física y su aceptación en la sociedad.

Keywords. Gender, physical form, wages, job position, labor discrimination, productivity.

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1. INTRODUCTION.

When in the society in which we live we mention some concepts such as physical form or gender, we hardly relate them to aspects as fundamental in the daily life of people as wages. Wages in an economy based on production and sales are often determined by the workers' productivity or profit. Or at least, this is the theory that has been studied years ago and that has set the tone for an important field of study such as that of wage efficiency (Saphiro and Stiglitz, 1984)

Neoclassical economic labor models imply that wages reflect the person productivity, but not their sex or physical form. However, the social nature of the economy makes this process much more complex, since the decisions of certain agents affect the behavior of others. Thus, in this investigation we examine whether individuals accept wage discrimination against obese individuals and if this discrimination is greater for women than for men.

In this dissertation, we follow an experimental approach. Specifically, we deliver online surveys in an experimental setting in which the participants, who act as wage setters, face different situations about salary evaluation. The treatment is the sex on the subject they have to select for a high or low position.

In this research, first we will present a brief review of the current literature about physical form and its effect on salaries, gender disparities and discrimination. Then it will be presented the methodology undertaken in the development of the experiment in line with theories about the social nature of the economy. After reviewing methodology and presenting the experiment descriptive results, it will appear an econometric analysis where we will present the undertaken model and the econometric results obtained. Then, we will relate these obtained results with the labor field's literature previously mentioned in the discussion section to end with a conclusion in which the main findings will be presented.

2. LITERATURE REVIEW.

Nowadays obesity is increasing, since 1975 obesity has almost tripled; in 2016 almost 40% of adults were obese and these numbers go on increasing. But not only adults are affected, young people has also shown patterns which suggest this increasing tendency, in 1975 just 4% of kids and teens were obese in 2016 they were around 16% over the total (WHO, 2020). In this report, we find that the stressful daily routine, bad habits due to the urbanization, new ways of transports, the lack of time to do sport, the new kinds of jobs in addition to the

increasing intake of fat food are some of the several originators of these results. Weight problems affect different aspects of our daily routine, from a healthy to a socioeconomic perspective in which labor market also plays an important role. Nowadays world is changing, and labor market requirements are changing too, some of these changes can be easily justifiable such as; education level, work experience, cognitive skills etc. But what about those which do not have a simple justification such as body weight or physical form?

Haomiao and Lubetkin (2005) show how obesity and weight are important conditionings of health-related quality-of-life. In the 1996 Behavioral Risk Factor Surveillance System (BRFSS), which is a system that collects data about US citizens' health by telephone surveys, obese and underweight people reported more unhealthy days than those reported by "normal weight" people. In the same paper, Haomiao and Lubetkin (2005) also mention that people whose weight was considered "not normal" reported lower levels of self-evaluation of health compared with people with "normal" weight. WHO (2020) indicates the huge impact that obesity has on health; heart diseases, some types of cancer, problems with the locomotor system and diabetes are some of the important problem derived from this situation. Following the same perspective of health from an economic point of view, in a study for New Zealand, Lal et al. (2012) find that the average extra number of days taken off was higher in obese workers, which represented an economic cost of productivity of 80\$ million. This consequence is much more important than what primary can be thought since as we will see later the idea of lower productivity in obese people is one of the key points behind the arising discrimination in the labor market. Respect to this idea, it is important to take into account, not only the direct costs but also the indirect costs, which sometimes are larger and more difficult to tackle.

But not only health is affected by weight; in a complementary path, several economic studies have related the importance of obesity in the labor market. Cawley (2004) examines the negative effect in wages of the differences in weight (respect to the average weight) in white females. In this paper Cawley identifies a difference in wages of 9 percent points between females with average weight (which presented higher wages) and females with weight different to the average (which shown the lowest wages), candidly speaking this is a huge difference. The author also mentions that the difference found in wages (alluding the 9 percent points) is equivalent in absolute value to the effect that 1.5 years of education or three years of work experience have in wages. This fact suggests us an interesting path to

examine in a society in which sadly physical appearance sets the pace in several aspects of the daily routine.

It is alarming to find that overweight would counterbalance the impact of education or work experience for females. This is related to sex-based discrimination in the wages's setting process (Greve, 2008). Gender disparities are also presented in some studies that found huge differences in the effect of weight on wages among males and females. According to Morris (2006) body mass index measures have a positive effect in males' occupational attainment and a negative effect in females' ones. However, a deeper analysis in this aspect should be carried out and on the study of the factors behind these results in order to understand the importance of the physical condition on the labor market, and on why this condition differs between genders.

It is also interesting to mention the possible pressure that beauty can exert over the results of the labor market. Hamermesh and Biddle (1994) present an interesting perspective of these aspects. According to the authors, people who is considered less beauty have lower wages than average-looking workers. The existence of the "beauty factor" is a conditioning difficult to estimate due to the subjectivity of beauty in itself. But it is important to take it into account in order to isolate other objective factors. In this field, beauty might be a factor independent on body weight. Thus, an experimental approach might help to disentangle the impact of both forces.

Due to the huge importance of productivity in most of the industries as indicator to set wages, we could also study how beauty affects this productivity in some specific occupations. In some occupations where customers' preferences are determinant, beauty can be considered as an important productive factor (Hamermesh and Biddle, 1994). Beauty can be seen as a conditioning of the outcome in some jobs, due to the nature of customer contact in those occupations. This idea of preferences must be considered, and it can be extrapolated to the field of physical condition, where employers can be biased by this factor when they evaluate productivity. As we are going to see later, physical form can create important stereotypes, which affect to the evaluation process of the current or expected productivity of a worker.

In the field of gender there is yet further room for improvement. We find few publications when we look at gender, physical form and labor market. And those publications even after getting specific results which suggest clear differences in the effect of weight in wages do not

show more than blurry conclusions at this point. Some authors have studied specific factors conditioning labour market and women-. According to Munasinghe et al. (2008), women in certain stages of their lives experience situations such as childbirth, marriage and family care responsibilities which makes them more likely to leave their jobs. This situation in the path of some theories about investment and training, implies lower wage returns to tenure. These theories imply that wages are going to be highly affected by the expected time that a worker is going to stay in a firm and the capacity that a firm has to keep him there. According to Munasinghe et al. (2008), in the case of females, higher wages are not going to be enough to keep a woman in a job position as there are external factors which have more weight in the females' leave decision. This conclusion can explain some of the differences in the labor market between genders but it can not explain the important differences that we found between women's groups sorted by body weight, these accentuated differences suggest the presence of other factors affecting same gender groups.

We have to consider not only wages as an important factor of the labor market, but there are also other factors affecting the labor situation of a person. Most of the studies mentioned above discuss the dimension of wages but we should also analyze the probability of being employed in order to have a more general view of the labour situation. Greve (2008) shows how on average obese women are 8.5% less likely to be employed than people with average weight and obese men show 2.8% less likeliness, the difference of almost 6 percentual points indicates a possible correlation between physical form and likeliness of getting a job. In this paper, Greve suggests that this difference in employment might be related to discrimination, and how difficult is to demonstrate and to reduce it. In Greve's words the lack of productivity is used as justification behind discrimination, but he finally admits that directly or indirectly, obesity and appearance of obese workers are real parameters to consider in some sectors which require for customer's contact.

After reviewing some of the leading studies in the field of labor market, we identify a gap as far as the acceptance of negative returns of overweight and obesity on wages. In order to examine people acceptances of these negative outcomes, we carry out an experimental study that in turns help to disentangle the impact of obesity/overweight from beauty, in different labor environments. In the study will be analyzed the relationships between gender, physical appearance and labor market in order to discover more about the importance of physical complexion at the time of setting wages and the differences, if they can be found in this experiment, between males and females.

3. THEORIES THAT ACCOUNT FOR THE WAGE PENALTY OF OBESITY AND CONCEPTUAL FRAMEWORK.

There exist important differences between the probability of being hired if you are a man or a woman (Greve, 2008). These differences are presented and studied across different sectors and are tightly correlated to the differences presented in wages, between groups of the same gender and between groups of different gender. This gap based on wages and job employment contribute strongly to the theory of discrimination in the labor market, and this idea will be key part in the development of this thesis.

The idea about discrimination related to obesity and gender is sometimes justified by the lack of productivity, but this point can only be justified at the point of physical form, and it loses meaning if we introduce gender into the equation. “Sometimes” since, as we have seen in Cawley’s paper the importance given to physical form is considered in many situations disproportionate according to the nature of the activity carried out. We mention physical form as conditioning of productivity, but for most of the sectors literature can not empirically support this affirmation.

Relating the theory of beauty and labor market presented by Hamermesh and Biddle (1994) and the studies about discrimination treated by Greve (2008) it is not difficult to think about the idea of social discrimination of overweight people in some sectors following the same perspective shown by Hamermesh and Biddle (1994) in the context of beauty. In this study was introduced the idea of discrimination by beauty: They found beauty-based discrimination not only on sectors which required for high interpersonal skills, due to its face to face nature, but also for sectors in which physical presence was not required (and because of this absence of face to face treat, productivity and job performance could not be affected by some factors such as beauty or physical form).

According to the current labor market theories the presence of discrimination at the time of wage’s setting process is a reality. Even on the assumption that bad physical form contributes negatively to productivity. For example, relating this concept with the theory of cost of productivity presented by Lal et al. (2012) and which has already mentioned in the literature review. It is difficult to explain for the analysts of the current trends of labor market the excessive importance that agents have given to this factor. This disproportionate relation only supports the idea of discrimination and how the society considers obesity as a negative point at the time of working.

The theory of discrimination in the workplace also suggests that obese people tend to be considered not only as less productive but they are also considered as people with less leadership skills, or people with low tenacity and persistence.- Being treated in most of the cases as less competent or capable. The idea of discrimination is difficult to demonstrate because of the implicit nature of itself. The subjectivity is one of the key pieces of the labor market puzzle and because of this fact we consider it an important point to take into account and a key factor to study if we want to estimate the importance of other conditioning affecting this puzzle.

The considerations about productivity carried out by employers and other teammates can be negatively influenced by the consequences result of the discrimination that obese people suffer in their job environment (O'Brien et al., 2016). The different types of discriminative behaviors are precursors of the current and future low performance, worse outcomes, higher turnover rate, higher stressful situations, or psychological problems. There is a feedback of which several factors take part, creating a correlation between discrimination, performance and consideration. A lower consideration by peers translates into more discrimination and, in turn, worse results. Finding the classic situation of a snake biting its tail and with it, an important problem difficult to solve.

Flint et al. (2016) study the same idea of discrimination up to the point of considering it a global concern and study the increasing tendency of reported discrimination by obese people and the difficult to solve this problem due to the lack of useful legislation in this field. These studies also talk about the problematic of subjectivity and interpretation even when there exists legislation which contributes to the non-discrimination of obese people. O'Brien et al. (2016) consider that informal discrimination has even greater impact in the labor outcomes than formal discrimination. Productivity as a recurrent topic is also treated by the authors, in their study they sort job offers by the nature of active environment or non-active environment. And the theory shows the same pattern, even in non-active environments, where it is supposed the lack of discrimination according to the physical form of the applicant. In conclusion obese people is considered less suitable than average weight people in most of the situations and in few cases this tendency shows different results. The authors also present other recurrent idea about discrimination by gender, in the same path presented in the literature review and treated in the first part of this theoretical framework. They show that female profiles were considered less suitable in all cases independently on their weight or physical form. In the line of other studies, this theory also talks about the notorious

differences between genders. These ideas contribute to the theory of gender discrimination, which is going to be studied in this paper, and how this discrimination is accentuated in the case of physical form. Having physical form higher impact in females than in males, without apparently having a justification in terms of productivity or job performance. Except for some sectors which traditionally have been influenced by the patriarchal image of the “mannequin woman” and which nowadays go on being affected by the same idea.

Bartels and Nordstrom (2013) also contribute to the field of discrimination and their paper is going to be an important point of depart for the development of this thesis. The theory behind the paper of these authors is based on the increasing percentage of obese people who report discrimination in comparison to average weight people. The numbers behind this theory are quite significant, up to 37 times more, obese people report labor discrimination respect to non-obese people. Bartels and Nordstrom (2013) present the idea of stereotypes as the main factors responsible for discrimination. Between others we find necessary to highlight the stereotypes about the lack of discipline and self-control, laziness, and emotional instability among others, as they are not only presented in this study but also they have been mentioned in several papers. These recurrent stereotypes do not have an empirical basis but according to the authors are usually determinant in the recruitment process. These factors show greater importance when the individuals do not present special characteristics which differentiates them from other workers. There is also presented the idea of gender discrimination in the sense of “the stringent” norms arising from the society and which are linked to the idea of an ideal weight for the females.

3.1 Conceptual Framework

Bearing in mind the theories that aim to explain the wage penalty that results from obesity, we frame our paper in the theory of labor discrimination in terms of physical form and gender . That is, firms pay less to those individuals with obesity because of their physical condition. Because decision makers are human beings, individuals in the society might also embody the personality traits that would support obesity-based discrimination in wages.

4. METHODOLOGY.

Measuring individuals’ acceptance of obesity-based discrimination is not straightforward. The problematic behind this question is the isolation of other factors, such as personality, personal skills, differences in beauty etc. As we will discuss now, social experiments would

help us to isolate the impact of obesity on wages from other observed and unobserved characteristics

In this research, we employ social experiments methodology. When we consider an experimental approach, it is difficult to compare economics with other sciences such as mathematics, medicine or biology, where if an experiment were to be reproduced in a laboratory over and over again under the same conditions, the same results would be the same. Economics differs from non-social sciences in its own nature; Agents intervene in the experiment and rarely respond in a totally similar way to the same stimuli. The main reason is that we find conditioning factors such as personality, education, intelligence that determine the behavior of these agents. According to this last point, Smith (1989), a great representative of the experimental economy and Nobel Prize, bring to light the distance between behavioral predictions from economic models, and behavior of human beings. Smith examined the possibility that despite acting rationally, human beings may “make mistakes”, and therefore, the observed results differ from the obtained from economic models.

Economics is indeed a social science, which is based on theoretical models. Due to this special feature, the first steps in this approach consisted in examining the possibility of including specific elements of a theory in a laboratory, testing whether they obtain the predicted theoretical outcomes. Specifically, the situation to be analyzed is presented in a controlled environment in order to evaluate the result of different variations of the same (Smith, 2002). Binmore (1999) also debates about the need to check in an experimental way, although not necessarily in which the results are binding, most of the economic theories, since the theory is worth the redundancy differs a lot from the reality.

Other important aspect in the economy is the relationship between agent’s decisions. The actions of some economic agents influence the actions and preferences of other economic agents, making social factors and their economic analysis necessary (Manski, 2000). The social nature of this experiment is remarkable, in the case of wage setting the actions carried out by the agents of an economy directly affect the behavior of other agents, therefore some a priori insignificant characteristics such as the sex or physical condition of applicants for a job, in a social environment are decisive when obtaining said position.

4.1 Experimental design.

This experiment has been developed following a series of rules that Hey (1991) already mentioned in his studies. Specifically, the problem presented is done in a clear and specific way, easily identifiable by the participant and that does not require difficulty or interpretation.

In our case, the respondent face three different avatars/figures; the “Figure Slim female/male” will correspond to an avatar with weight below average, the “Figure Average female/male” will represent an avatar with an average weight and the “Figure Overweight female/male” will represent an obese avatar, and then the respondent must assess according to a situation presented, which of the figures in the section considers that they receive the highest salary and which of these according to their opinion receive the lowest

For the creation of the different avatars, we follow an orthogonal rule according to their personal characteristics. Specifically, we created the; avatars using a 3D program and differ only in terms of physical condition, three figures are presented that differ in apparent weight: an avatar with a very thin complexion with an apparent weight below average, an avatar with a physical complexion within the average, and an avatar with an apparent overweight with respect to the average population. Figure 1 and Figure 2 include the avatars we design for this study.

Figure 1. Female’s Avatars; Underweight, average weight and overweight figures.



Source. Own elaboration

Figure 2. Male's Avatars; Underweight, average weight and overweight figures.



Source. Own elaboration

Respondents decide which avatar has the highest or the lowest wages in four different situations or scenarios: “Architectural scenario” asks to evaluate the staff of a pioneering architecture studio in the sector; “School scenario” asks to evaluate the teaching staff of a primary school; “Bar Scenario” asks to evaluate the staff from a neighborhood bar, and “Ibex scenario” asks to evaluate the workforce of an important company belonging to the Ibex 35. The scenarios are quite different between them, they represent different socioeconomic positions in order to evaluate the importance of physical form in each of the situations and the possible dissonance between elections depending on the avatar’s gender.

In order to visually adapt the avatars to the four different situations, we maintain the same physical characteristics, but we make them to vary their clothing according to the sectors. Figure 3 and 4 display the avatars by scenario.

Figure 3. Female avatars by scenario.



Source. Own elaboration

Figure 4. Male avatars by scenario



Source. Own elaboration

We consider necessary to know if it exists discrimination by gender depending on the physical form and the socioeconomic situation, to know how physical form feeds gender stereotypes across different range of salaries. In this case we have chosen evaluating an Ibex35 workforce in order to measure these effects on a high paid job, architectural staff

representing a middle/high class, school workforce as medium socioeconomic position, and a neighborhood bar as the scenario with lowest salaries.

The experiment allows us to analyze how the responses of the respondents vary according to the gender of the avatars: therefore two different treatments or controls have been created: female avatars and male avatars. The scenarios between the different treatments do not vary at all, the different complexions either (as seen in figure 3 and 4). Other factor to take into account is the beauty conditioning, thanks to the 3D program's ability to maintain the basic features of each avatar regardless of gender change, it is intended to isolate this factor.

For the distribution of the respondents among the different treatments, a classification question is asked at the beginning of the survey. The classification question will try to distribute in a relatively proportional way the number of people who will carry out the survey in which female avatars appear and those who carry out the survey starring male avatars. The classification question is trivial and would be the following: “Among the green and blue colors, which would you choose?”; by presenting two options not directly related to the survey, the aim is to distribute the surveyed population independently of the cultural, social, demographic group to which they belong as randomly as possible. The participant of the experiment who chooses the “Blue” answer will participate in the male avatar survey; and the participant who chooses the “Green” answer will participate in the survey on female avatars.

At the end of the survey, some demographic data are collected, such as age and gender, of the person who carried it out for further analysis. In the same way, the anonymity of the responses is met with the aim of avoiding any condition derived from the personal identification of the respondent.

The participants of the experiment have been selected within the environment of the researcher. For this, social networks, contact groups, and private messages have been used in which the participants were asked for their collaboration in carrying out the experiment. The importance of anonymity as a key feature of the experiment has been recalled on numerous occasions, so that the participants belonging to the researcher's environment were not inhibited when responding. The first question or classification question that we have already mentioned, is also used so that due to the way of finding participants, they were the ones that were randomly included in each survey. And thus avoid a possible involuntary alteration of the results due to belonging to the same sociodemographic group.

5. DESCRIPTIVE ANALYSIS

Table 1 presents the summary statistics of the observations whereas Table 2 presents the results to all the questions proposed in the experiment. A total of 100 people participated in the survey, which was distributed among the treatments in the following way, after completing the classification question: 56 people chose the color blue, therefore they were included in the survey corresponding to the treatment " male avatar ", 44 people chose the green answer, therefore they carried out the survey corresponding to the " female avatar ". Out of the 100 people who carried out the survey 46 belonged to the age range 19-25 years, 22 to the range of 36-45 years, 19 to the range of people over 46 years, 9 to the range 26-35 years and 4 were under 18 years old. Out of the 100 participants, 56 were women, while 44 were men.

Table 1. Summary statistics

Variable	Observations	Mean	Std deviation	Min value	Max value
Highwage	400	0,1775	0,3825698	0	1
Lowwage	400	0,4975	0,5006199	0	1
Gender Female	400	0,56	0,4970086	0	1
<25 years old	400	0,5	0,5006262	0	1
26-35 years old	400	0,09	0,2865402	0	1
36-45 years old	400	0,22	0,4147651	0	1
46+ years old	400	0,19	0,3927922	0	1

Source. Own elaboration

Table 2. Results to the questions of the experiment.

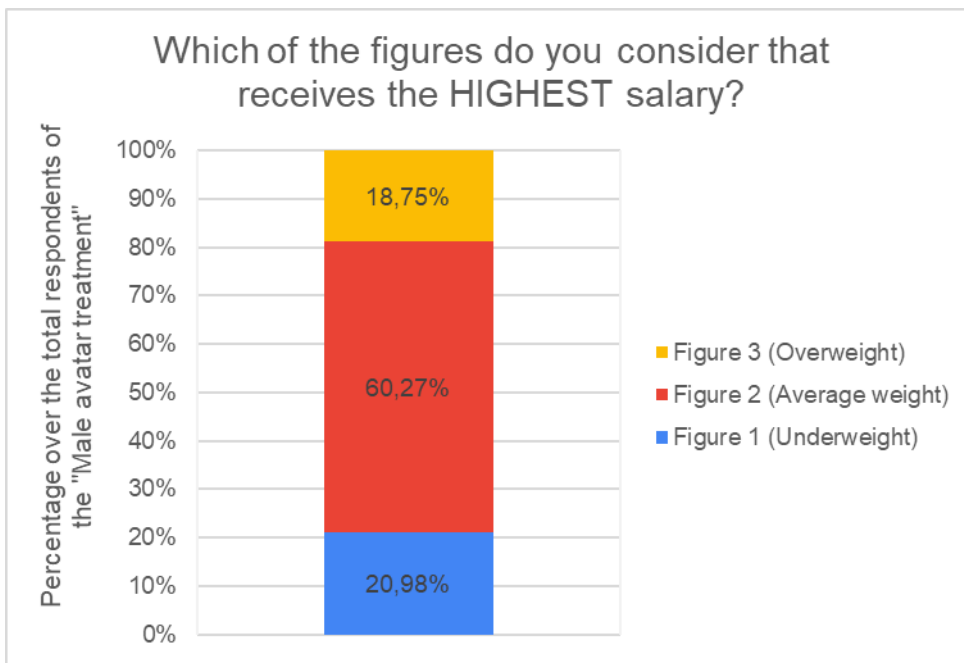
		Treatment 1 (Male Avatar) 56 participants		Treatment 2 (Female Avatar) 44 Participants	
Situation 1	Figure 1	16	29%	3	7%
Architecture studio	Figure 2	35	62%	38	86%
Who receives GREATER wage?	Figure 3	5	9%	3	7%
Situation 1	Figure 1	13	23%	16	36%
Architecture studio	Figure 2	7	13%	4	9%
Who receives LOWER wage?	Figure 3	36	64%	24	55%
Situation 2	Figure 1	15	27%	5	11%
Primary School	Figure 2	37	66%	26	59%
Who receives GREATER wage?	Figure 3	4	7%	13	30%
Situation 2	Figure 1	22	39%	23	52%
Primary School	Figure 2	6	11%	2	5%
Who receives LOWER wage?	Figure 3	28	50%	19	43%
Situation 3	Figure 1	6	11%	4	9%
Neighborhood bar	Figure 2	30	53%	30	68%
Who receives GREATER wage?	Figure 3	20	36%	10	23%
Situation 3	Figure 1	28	50%	22	50%
Neighborhood bar	Figure 2	8	14%	6	14%
Who receives LOWER wage?	Figure 3	20	36%	16	36%
Situation 4	Figure 1	10	18%	6	14%
lbex 35 company	Figure 2	33	59%	35	80%
Who receives GREATER wage?	Figure 3	13	23%	3	6%
Situation 4	Figure 1	21	38%	9	21%
lbex 35 company	Figure 2	10	18%	4	9%
Who receives LOWER wage?	Figure 3	25	44%	31	70%

Source. Own elaboration.

The questions for all the scenarios are as follows: Which do you think receives the highest salary in the proposed situation from the following three figures? And the second, which of the figures do you think receives the lowest salary? Regardless of the setting in which the questions were asked, that is, on average, the proportion of participants who considered in the treatment of “male avatar”, “Figure Slim male” (corresponding to the avatar with apparent weight below the mean) as that which perceived the highest salary was 21%, and the proportion of participants who considered this figure as the one who received the lowest salary was 37%.

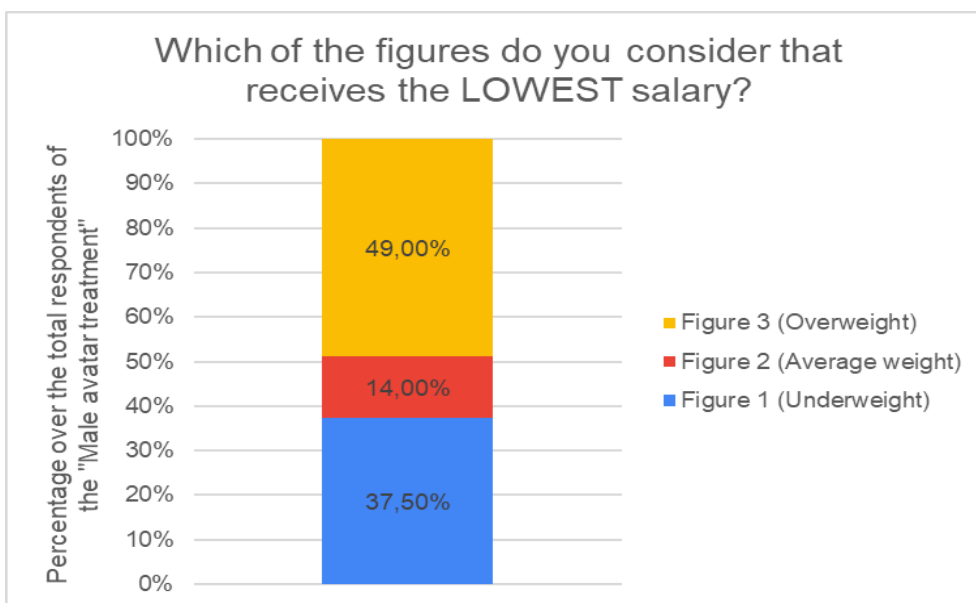
In the same treatment of the "male avatar", with respect to the figure that apparently showed average physical complexion, “Figure Average male”, the proportion of participants who chose it as the one that received the highest salary was 60% and as that figure that they considered received the lowest remuneration, 14%. Regarding “Figure Overweight male”, or the one that was shown to be overweight, 19% of those surveyed in the male treatment considered that this “Figure Overweight male”, received the highest salary; and 49% believed that this figure, among the 3 options, was the one that received the lowest wages. The following graphs; Graph 1 and Graph 2 show the results to the general questions of the “Male treatment”.

Graph 1. Which of the figures do you consider that receives the highest salary? – Male treatment.



Source. Own elaboration

Graph 2. Which of the figures do you consider that receives the lowest salary? – Male treatment.

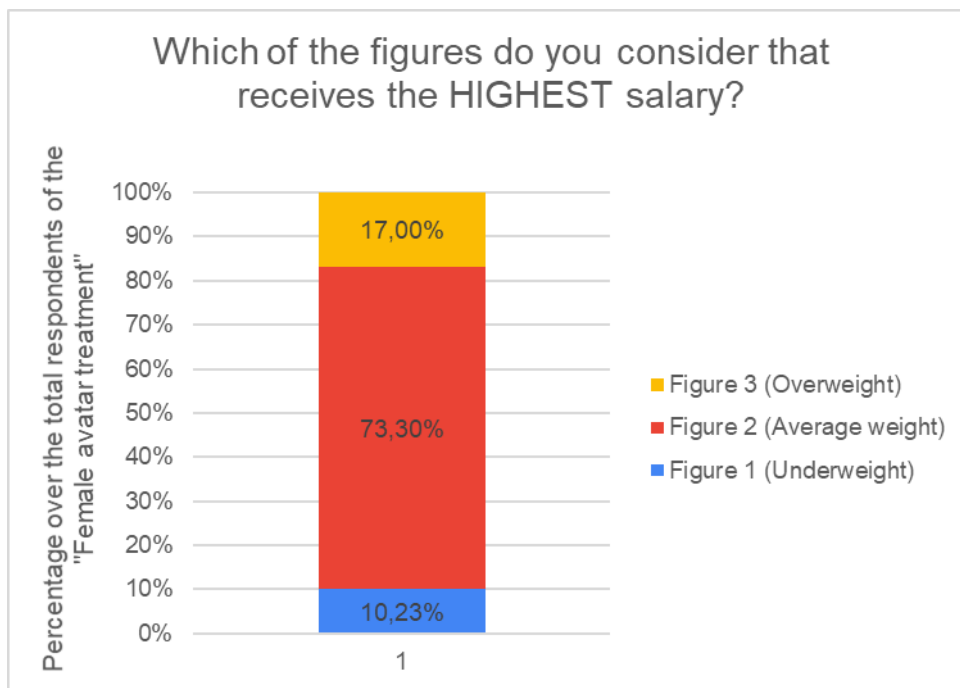


Source. Own elaboration

Regarding "female treatment", according to 10% of respondents, "Figure Slim female" received the highest salary, while 40% believed that this figure received the lowest salary. Regarding "Figure Average female", 73% of the respondents believed that it received the highest salary, and 9% believed that this figure received the lowest salary. The proportion of participants who considered "Figure Overweight female" as the one that received the highest salary was 16%, while those who considered that it received the lowest salary was 51%.

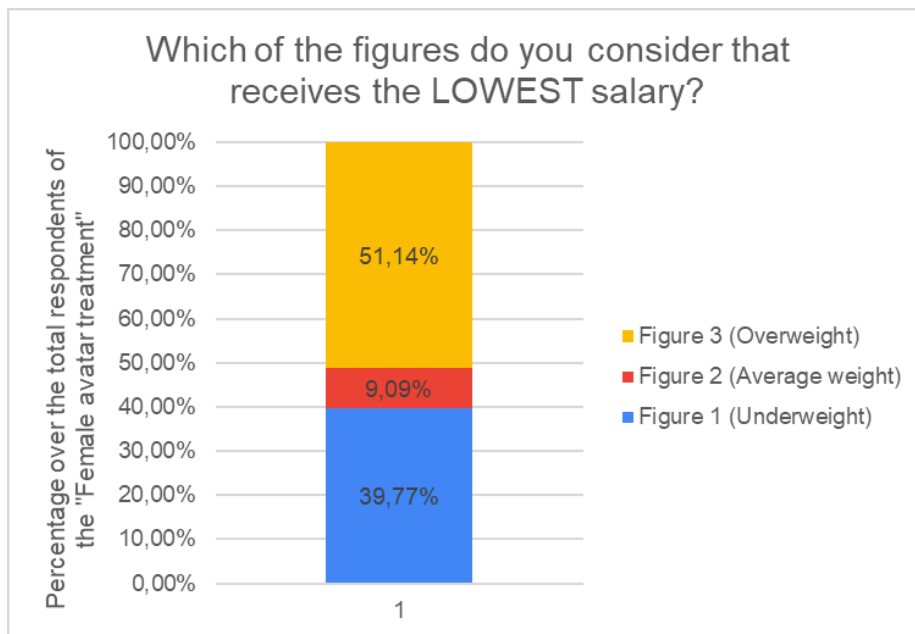
The following graphs; Graph 3 and Graph 4 show the results to the general questions of the "Female treatment".

Graph 3. Which of the figures do you consider that receives the highest salary? – Female treatment.



Source. Own elaboration

Graph 4. Which of the figures do you consider that receives the lowest salary? – Female treatment.



Source. Own elaboration

As for the distribution by scenarios, in the treatment of the male avatar. In “Architectural scenario”, 29% of respondents considered that the highest salary corresponded to the figure with an apparent weight below the average. According to the respondents, 62% of them believed that in this scenario, figure with average weight received the highest salary and 9% believed that the figure with an apparent overweight was the best paid.

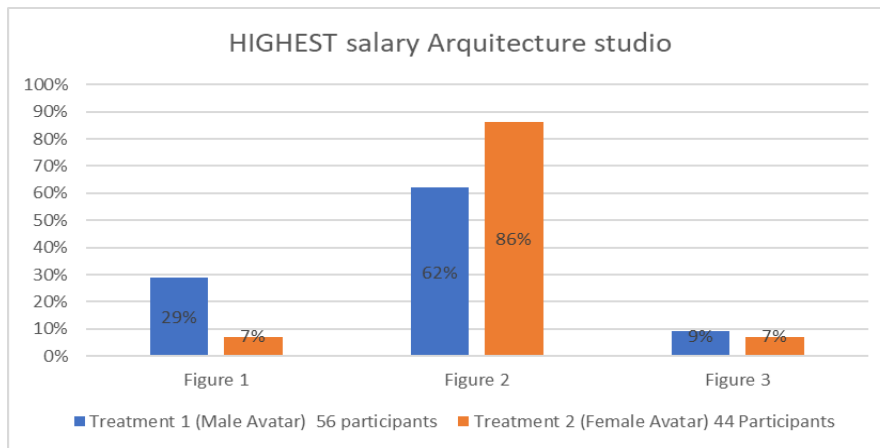
Similarly, to the question, which of the above figures do you think receives a lower salary? 23% of the respondents believed that “Figure Slim male” with below-average weight received the lowest of wages. Among them, 13% believed that the lowest of wages corresponded to “Figure Average male” with weight within the average, and 64% believed that the lowest of the wages corresponded to the male avatar who was overweight, or what is the same, “Figure Overweight male”.

In this “Architectural scenario” in the female treatment, 7% believed that “Figure Slim female” received the highest of the wages, 86% of the respondents thought that “Figure Average female” was the best paid, and 7% believed that the best paid was “Figure Overweight female”. The opinion regarding the question about the figure that received the lowest salary, shows that 36% thought that this corresponded to “Figure Slim female”, 9%

believed that it corresponded to “Figure Average female”, and 55% believed that “Figure Overweight female” perceived the least of these.

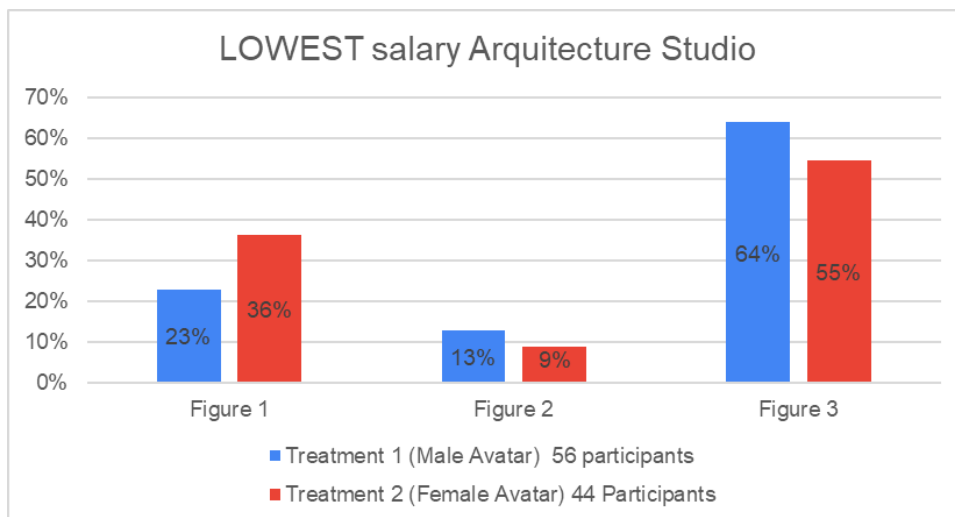
Graph 5 and 6, show a comparative of the results for the Architectural scenario between treatments.

Graph 5. Highest salary architectural studio.



Source. Own elaboration.

Graph 6. Lowest salary architectural studio.



Source. Own elaboration

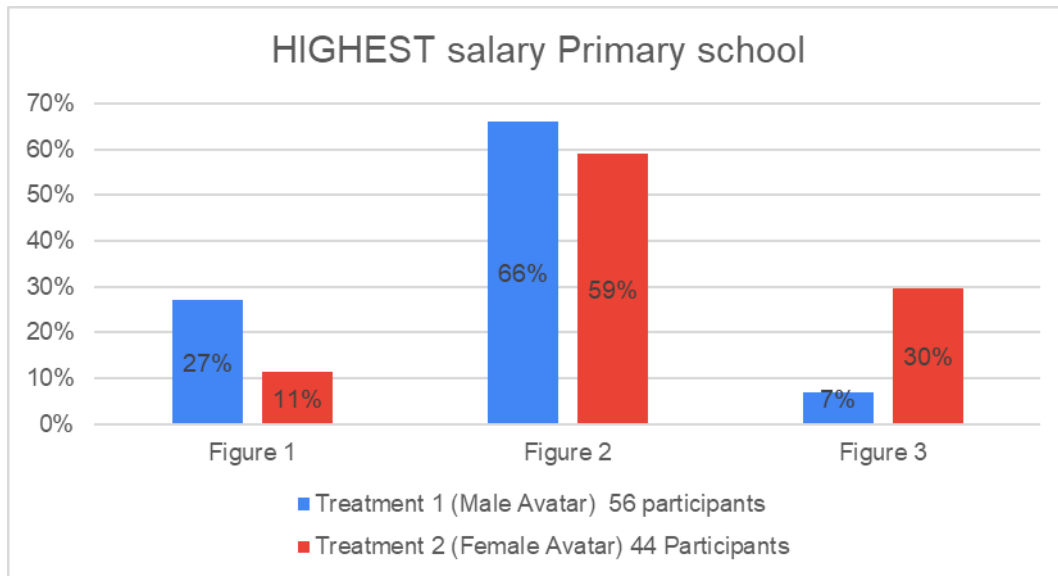
In the “School scenario” scenario, the participant is asked to evaluate the staff of a primary school, in the same way as in the previous section, the respondent is asked to choose among

the three figures the one who believes which receives the highest salary and the one who believes that receives the minor. The physical complexion of the figures is distributed in the same way, “Figure Slim female/male” is that with a weight below the average, “Figure Average female/male” presents a weight within the average and “Figure Overweight female/male” is apparently overweight.

In the group presented with the male avatar treatment, to the question, which of the following figures do you think receives a higher salary? 27% of them think that this statement corresponds to “Figure Slim male”, 66% think that this characteristic is typical of “Figure Average male”, and 7% think that the figure with apparent overweight is the one that receives the highest pay. Regarding the question that asks to assess which of the three figures has the lowest salary, 39% think that the lowest salary is received by “Figure Slim male”, 11% think that “Figure Average male” is the worst paid, and 50% think that this characteristic corresponds to “Figure Overweight male”.

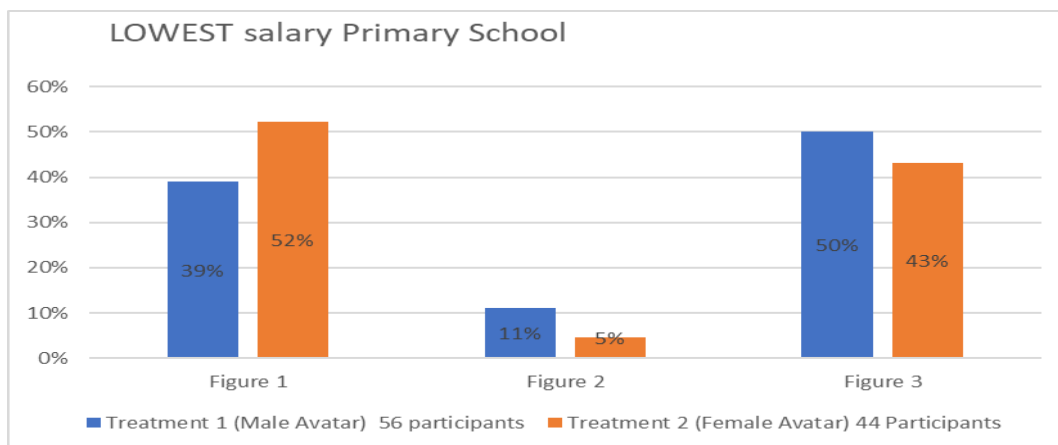
In this “School scenario” when faced with the same questions in the treatment of the female avatar, the answers to the first question (highest salary) correspond to the fact that 11% believe that “Figure Slim female” receives the highest remuneration, 59% think that “Figure Average female” is better paid, and 30% of respondents believe that “Figure Overweight female” is the one that earns the most. In contrast, 52% of the participants think that according to their opinion, “Figure Slim female” earns the least of the three, 5% think that, on the contrary, this characteristic corresponds to the figure with a weight within the mean, and 43% think that the lowest paid person is “Figure Overweight female”, that is, the one who is overweight. Graphs 7 and 8, show a comparative of the results for the School scenario between treatments.

Graph 7. Highest salary School.



Source. Own elaboration

Graph 8. Lowest salary School.



Source. Own elaboration.

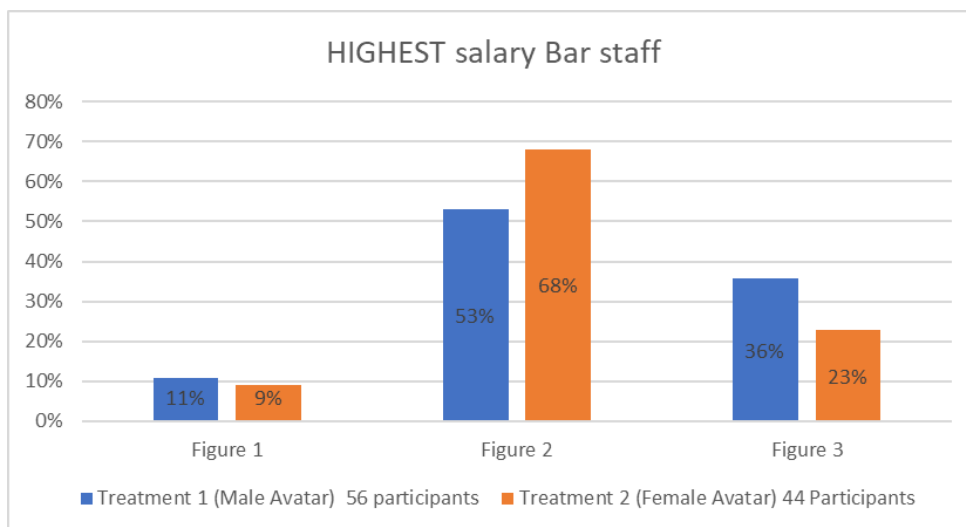
In the “Bar Scenario”, the respondent is presented with the situation in which his mission is to select which of the figures represents the person with the highest salary and which represents the person with the lowest salary in a neighborhood bar.

In the treatment of the male avatar, 11% of the respondents believe that “Figure Slim male” (person with an apparent weight less than the average) is the one who receives the highest salary, slightly more than half of the participants, 53% think that this position corresponds to the person with an average weight, “Figure Average male”, while the remaining 36% think

that it is “Figure Overweight male” who seems to receive a higher salary. Regarding the opposite question, where the interest in knowing the opinion about who receives the lowest salary is indicated, 50% of the respondents believe that “Figure Slim male” receives it, 14% think that the person who earns less It is the one that has an average weight, and the remaining 36% believe that the lowest salary is perceived by “Figure Overweight male”.

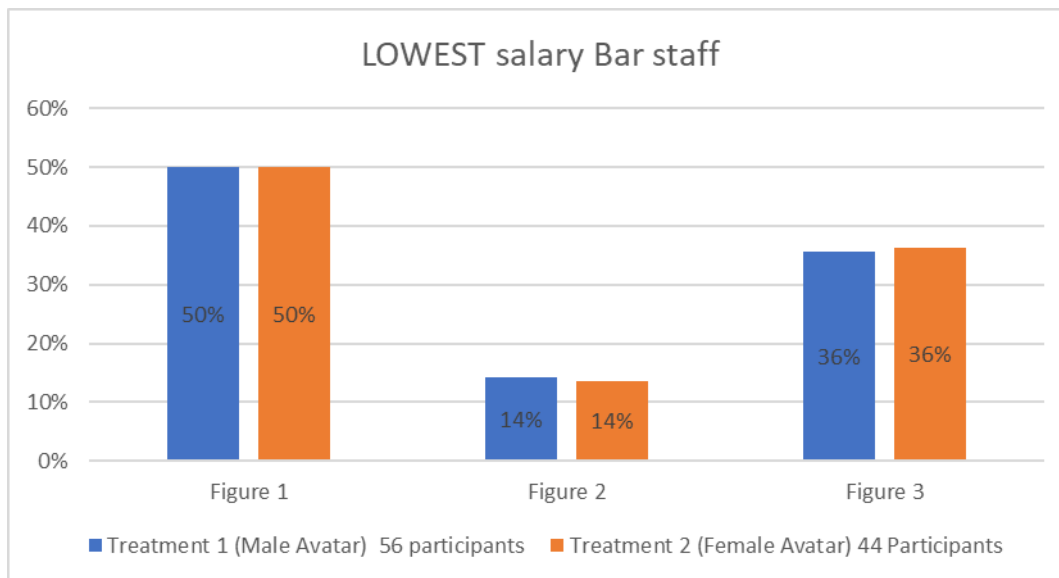
In the treatment of the female avatar, to the first question 9% think that the person with the most earns is the figure with weight below the average; On the contrary, 68% think that the avatar with average physical complexion is the one who receives the highest salary; and the remaining 23% think that the highest salary is received by “Figure Overweight female”. Regarding the second question (lowest paid), the same results are shown as in the male treatment, the lowest salary according to 50% of the respondents, is received by “Figure Slim female”, 14% of the participants believe that the figure that earns the least is “Figure Average female”, and the remaining 36% of people suggests that “Figure Overweight female”, is that which owns the lowest income. Graphs 9 and 10 show a comparative of the results for the Bar scenario between treatments.

Graph 9. Highest salary Bar.



Source. Own elaboration

Graph 10. Lowest salary Bar.



Source. Own elaboration

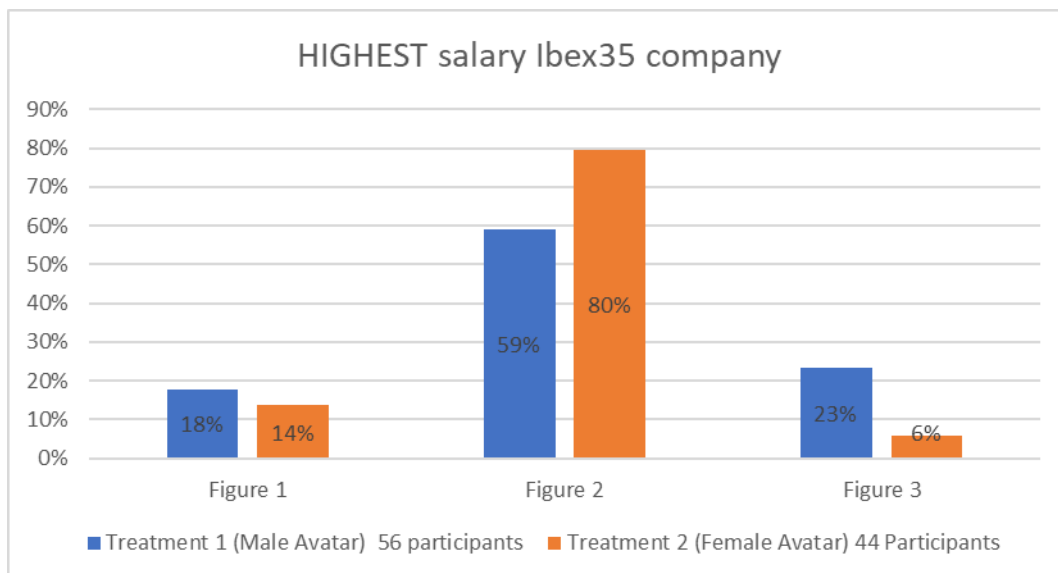
Finally, in “Ibex scenario”, the participant is asked to evaluate a workforce corresponding to an Ibex 35 company and to answer the same questions as in the previous sections. Which avatar do you think that receives the highest wage? And, Which avatar do you think that receives the lowest wage?

In this case, it can be seen that in a situation in which higher wages are theoretically received than in the other scenarios, the answers to the questions starting with the male treatment are: 18% of the respondents believe that “Figure Slim male” is the one that could have a higher salary, while 59% of respondents think that the highest salary is probably received by “Figure Average male” and finally 23% believe that “Figure Overweight male”, is the one that according to their opinion is more likely to receive it . In the second question, the answers are distributed as follows, 37% of the respondents believe that the figure that presents an appearance of less physical complexion, that is, “Figure Slim male”, receives the lowest salary, for 18% of the respondents, it is “Figure Average male” who appears to earn less, and for the remaining 45% “Figure Overweight male”, fits this question.

In the answers provided by the participants who have carried out the survey of female avatar treatment, we found that for the question about the distribution of the highest salary, 14% answered that “Figure Slim female” is probably the one with the highest income, while the vast majority made up of 80% of the respondents, suggest that it is the figure shown by a

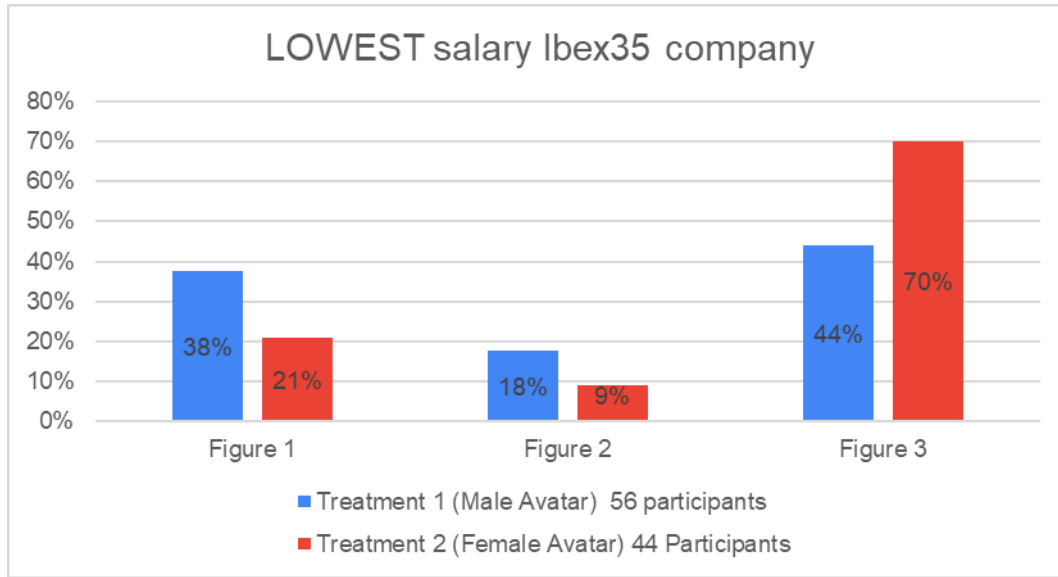
person with average physical complexion who perceives the highest gains, leaving a minority made up of 6% of the respondents who believe that it is the figure that shows overweight who receives more money. On the contrary, regarding the second question of the scenario, 21% of the people believe that whoever earns the least from the 3 figures could be “Figure Slim female”, 9% of those surveyed believe that according to their opinion, who would receive the salary Lower would be “Figure Average female”, and an absolute majority made up of 70% of the participants believe that it is “Figure Overweight female”, who in this scenario receives the lowest salary. Graphs 11 and 12 show a comparative of the results for the Bar scenario between treatments.

Graph 11. Highest salary Ibex35.



Source. Own elaboration.

Graph 12. Lowest salary Ibex35.



Source. Own elaboration

6. ECONOMETRIC ANALYSIS

6.1 Empirical strategy

In this econometric analysis, we examine the effect of gender on the probability of an obese person to receive the highest or lowest salary among different avatars, in each of our four scenarios “Architectural scenario”, “School scenario”, “Bar Scenario” and “Ibex scenario”.

Specifically, we provide OLS and Logit estimation for the following equations, representing average responses. Regression model 1 represents the choice of an overweight avatar for a high wage (HW) position. Regression model 2 represents the average choice of an overweight avatar for a low wage (LW) position.

$$\begin{aligned}
 HW = & \beta_0 + \beta_1 School + \beta_2 Bar + \beta_3 IBEX + \beta_4 FemAvatar + \beta_5 School \\
 & * FemAvarar + \beta_5 Bar * FemAvarar + \beta_5 IBEX * FemAvarar \\
 & + X'B + \varepsilon
 \end{aligned} \tag{1}$$

Where X is a vector of control variables and ε is the idiosyncratic characteristics of individuals, normally distributed.

$$\begin{aligned}
LW = & \alpha_0 + \alpha_1 School + \alpha_2 Bar + \alpha_3 IBEX + \alpha_4 FemAvatar + \alpha_5 School \\
& * FemAvarar + \alpha_5 Bar * FemAvarar + \alpha_5 IBEX * FemAvarar \\
& + X'A + v
\end{aligned} \tag{2}$$

Where X is a vector of control variables and v is the idiosyncratic characteristics of individuals, normally distributed.

Because decisions might be influenced by the context and demographical background of the respondent, other explanatory variables are included in the analysis. For this reason, we include the different demographic features of the participants collected in the survey “Age” and “Gender”; these dummy variables will help us to reduce the potential impact of the agent’s own features on the results.

Each model is treated by an OLS (ordinary least squares) and a LOGIT function. The objective of estimating our equations using different estimation methods is to check for robustness of results, and to adapt to the binary characteristics of the dependent variable. The use of this LOGIT model, according to Rojo (2007), guarantees greater flexibility in terms of the analysis of explanatory categorical or scale variables, which are those presented in the experiment.

6.2 Results:

In the tables 3 and 4, we can observe in the first column all the variables selected for the model. The first three rows present the different scenarios for which the participant had to evaluate the avatar’s salary. It is excluded the “Architectural scenario”, which is the scenario with which the results of other scenarios are compared. The fourth row “Female Avatar” will study the effect of the gender’s avatar on the probability of choosing ““Figure Overweight female””, avatar with overweight, as the best/worst paid figure in the situation about staff of an architectural studio. Rows number 5, 6, 7 and 8 represent the variables corresponding to the participant’s features. To finish, we find how rows 9, 10 and 11 represent the interaction between each of the scenarios for which the participant is making the decision and the treatment in which the participant has been allocated (understanding as treatment the gender of the avatar).

Table 3. Probability of choosing Figure 3 (Overweight figure) for a high wage

Probability of choosing Figure 3 (Overweight figure) for a high wage				
	(1)	(2)	(3)	(4)
	OLS	OLS	Logit	Logit
School	0.090*	-0.018	0.868*	-0.245
	[0.047]	[0.052]	[0.460]	[0.702]
Bar	0.220***	0.268***	1.622***	1.768***
	[0.053]	[0.075]	[0.434]	[0.557]
IBEX	0.080*	0.143**	0.794*	1.144**
	[0.046]	[0.069]	[0.463]	[0.579]
Female Avatar	-0.037	-0.036	-0.272	-0.406
	[0.039]	[0.055]	[0.283]	[0.763]
Female	-0.066*	-0.066*	-0.478*	-0.500*
	[0.039]	[0.039]	[0.279]	[0.283]
Age, 26-35	-0.084	-0.084	-0.685	-0.711
	[0.061]	[0.060]	[0.584]	[0.590]
Age, 36-45	-0.031	-0.031	-0.210	-0.220
	[0.050]	[0.049]	[0.371]	[0.371]
More than 46	-0.061	-0.061	-0.444	-0.464
	[0.051]	[0.051]	[0.392]	[0.405]
School & Fem. Av.		0.245**		2.020**
		[0.095]		[0.980]
Bar & Fem. Av.		-0.109		-0.357
		[0.105]		[0.893]
IBEX & Fem. Av.		-0.143		-1.144
		[0.088]		[1.024]
Constant	0.160***	0.159***	-1.916***	-1.846***
	[0.045]	[0.048]	[0.418]	[0.491]
Sample Size	400	400	400	400
R2	0.059	0.098		

Robust standard errors in brackets
 * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source. Own elaboration

Table 4. Probability of choosing Figure 3 (Overweight figure) for a low wage

Probability of choosing Figure 3 (overweight figure) for a low wage				
	(1)	(2)	(3)	(4)
	OLS	OLS	Logit	Logit
School	-0.130*	-0.143	-0.542*	-0.606
	[0.069]	[0.093]	[0.290]	[0.393]
Bar	-0.240***	-0.286***	-1.012***	-1.212***
	[0.068]	[0.090]	[0.295]	[0.400]
IBEX	-0.040	-0.196**	-0.169	-0.828**
	[0.070]	[0.094]	[0.292]	[0.400]
Female Avatar	0.070	-0.053	0.298	-0.221
	[0.051]	[0.099]	[0.216]	[0.418]
Female	0.153***	0.153***	0.646***	0.661***
	[0.051]	[0.051]	[0.217]	[0.221]
Age, 26-35	-0.066	-0.066	-0.283	-0.291
	[0.089]	[0.089]	[0.379]	[0.388]
Age, 36-45	-0.037	-0.037	-0.158	-0.162
	[0.066]	[0.065]	[0.275]	[0.277]
More than 46	0.085	0.085	0.363	0.368
	[0.067]	[0.067]	[0.288]	[0.292]
School & Fem. Av.		0.029		0.133
		[0.139]		[0.583]
Bar & Fem. Av.		0.104		0.444
		[0.137]		[0.593]
IBEX & Fem. Av.		0.356**		1.536**
		[0.137]		[0.603]
Constant	0.482***	0.536***	-0.083	0.142
	[0.066]	[0.076]	[0.275]	[0.325]
Sample Size	400	400	400	400
R2	0.063	0.083		

Robust standard errors in brackets
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source. Own elaboration

After explaining the main features of the econometric model undertaken, and the different variables chosen, now we will provide a brief presentation of the results obtained.

According to the first model “Probability of choosing an obese people as the avatar with HIGHEST SALARY”, we find that independently of the avatar’s gender, when the participant faced the situation of evaluating which avatar would receive the highest salary; the avatar with overweight was chosen with more probability in the scenario “Staff of a neighborhood bar”, respect to the other scenarios. In line with this aspect, the model highlights a strong significant difference. In the model 1 looking at the gender’s respondents, we find that according to the results, the female respondents are less likely to choose an avatar with overweight as the best paid figure.

If we analyze the results from the perspective of the avatar’s gender, we find that there are not significant differences between genders for this model in the “Bar”, “Ibex 35” and “Architectural studio”. In contrast, we find that for the scenario denominated “School”,

there are moderate significant differences. These differences suggest that it is more likely that in the school's scenario for the female treatment, the avatar with overweight is chosen as the best-paid, respect to the other scenarios.

Regarding to the second model "Probability of choosing an obese people as the avatar with LOWEST SALARY", firstly we find that the constant provided by the econometric analysis, almost triplicate the constant found in the first model in the case of the OLS analysis and even further in the results provided by the LOGIT analysis. In the first part about the scenario analysis independently of the avatar's gender, we find, with strong significance, that when the participant faced the situation of evaluating which avatar would receive the lowest wage; the avatar with overweight was chosen with less probability in the "Bar" scenario, respect to the other scenarios. In line with the previous model, we find that demographic characteristics of the participants affect the results. Female respondents are more likely to choose the avatar with overweight as the worst paid figures.

Complementing the results obtained in the first model, in the sectorial analysis of the Model 2, we see how there exist moderate significant differences in the scenario "Ibex 35". The row 11th of the second table suggests that according to the results provided by the model, it is more likely that in the Ibex's scenario for the female treatment, the "Figure Overweight female" (avatar with overweight) is chosen as the worst paid, respect to the rest of the scenarios.

As we can observe in the columns 3 and 4 of each table, we carry out a LOGIT analysis. The objective of this model, as we have explained earlier, falls in the own dichotomous nature of the survey, in which all the questions present a limited number of answering options.

7. DISCUSSION

In this research we want to examine the effect of physical form on salaries, and how this effect differs when we move into genders and job positions. For this purpose we have developed the experiment explained above. In this experiment, in the first place we have isolated the greatest number of factors which could affect "Productivity", thus the beauty of the avatars used, the randomness of the framing of each participant in each treatment and the heterogeneity of the sample have worked for this purpose.

As one of the factors to take into account in which the most emphasis was made in this research was knowing how the physical form affects the wages of workers. As a theoretical basis on how productivity affects wages, we have reviewed the literature on the labor market. Greve (2008) alludes to the lack of information about how productivity is affected by physical condition, and defends together with O'Brien et al. (2016) as possibly productivity is affected not by the poor physical shape of workers, but by the discrimination that obesity or underweight generate.

If this discrimination in terms of salary exists, it should be represented in a scenario like the one we have proposed, in which all other information that should a priori be relevant when setting a salary is hidden for example education, experience in the position, social skills, etc. In relation to this point, the results offered by our experiment are clear. In general terms, the overweight or underweight worker receives a much more negative evaluation in terms of salary than the worker with an average weight. These results are given in both men and women, and that is why that for the question "Which of the following figures do you think receive the highest wages?". Regarding male treatment, regardless of the setting, 60% were chosen for the avatar with an average weight, and around 20% for the overweight avatar and approximately another 20% for the underweight avatar. In the female case, the results were similar, even more accentuated. In this treatment, more than 70% indicated that the highest salary was received by the avatar with weight within the mean, and the other 30% was distributed among the two remaining avatars.

Therefore, in line with the theories proposed by Cawley (2004), Mitra (2001), Greve (2008) and many other authors mentioned above in the theoretical framework, we see that there is some discrimination against overweight or underweight people when setting a salary. We emphasize that according to our experiment, discrimination is against anyone who has a different weight than the average. This point is important because some of the studies mentioned above talk about obesity, when probably the discrimination it extends itself beyond that.

In the investigation different scenarios are presented to know how the evaluation of wages affects different professional fields. Mitra (2001) discusses the difference between the physical form and the different professional fields. The author affirms according to her research, that there is first a difference in terms of gender (which we will discuss later) and later in terms of professional position. For jobs with low qualifications, the author defends that discrimination is higher, and for jobs with high qualifications, it is lower due to the shortage of job supplies of the latter. Reviewing the results released by our experiment, it is

true that we observe small differences in each of the proposed situations. These scenarios differ in the required qualification. For example, a scenario is presented to evaluate the staff of an important Ibox 35 company, that a priori will require more qualification compared to another situation in which the staff of a neighborhood bar is asked to be evaluated. The "architectural studio" and "school" scenarios that occupy the intermediate ranks are also presented.

Although the results follow similar patterns, there is always a discrimination towards avatars with a different weight than the average. For example, the econometric model developed in this research shows how in the "neighborhood bar" scenario, the probability that the overweight avatar is chosen as the highest paid, is slightly higher compared to the other scenarios. This characteristic collides a bit a priori with the results that Mitra (2001) obtained from the analytical study of her sample. In her case, a low-skilled job, such as working in a neighborhood bar, shows a decrease in discrimination against overweight people. Although it is true, especially in men's treatment, that part of this greater probability of being chosen as the best paid is compensated by a decrease in the probability of the underweight avatar being chosen. Even so, the results seem to be clear at this point, being the scenario that is supposed to require less qualification the less affected by the physical form.

Continuing with the previous point, in our results we find that the scenario that corresponds to the most remunerated a priori position "Ibox 35 company" also shows less discrimination in relation to physical form, this part does coincide with the conclusions to which Mitra (2001) came in her research. Although in this case we must mention that there are quite significant differences in terms of gender, this point will be the next one that we discuss.

To conclude, another very interesting point of our research is the role that gender plays in wages, and more specifically the role that gender plays in evaluating physical condition as an important determinant of wages. The literature on the role of gender in the labor market is extensive as an example of this is the research by Furnham and Wilson (2011) that examines this role in the British labor market. The conclusions are clear, the market grants lower wages to women, and the difficulty that the female gender has in accessing and promoting certain highly qualified jobs is greater (De Paola et al., 2017).

Although this point is relatively accepted by most of the labor market literature, the importance of our research lies in measuring how the gender difference affects the evaluation of wages in relation to the physical form. The literature we find is also sufficient to give us a point of origin in our experiment, Morris (2006), Munasinghe et al. (2008), Cawley (2004

among others, suggest that the discrimination regarding the physical form is much greater in women than in men. An obese female worker on average will be penalized 9% more than an obese worker in terms of salary. This difference is really overwhelming when we compare it with other factors that suppose the same wage loss, for example it would correspond to one and a half more years of high-level education (Cawley, 2004).

In general terms, these differences are clearly observable in our results. To the question "Which of these avatars do you think receives the highest salary?" In general and regardless of the proposed scenario, the selection of the overweight avatar in the female treatment was 20%, while in the male treatment it only reached 10%, that is, twice as many participants positively evaluated the male avatar compared to the female. We can think that, as happened in the previous case, this difference was absorbed by the underweight avatar, but we see how this underweight avatar is practically evaluated in the same percentages in both treatments, 17% in the male and 18% in the female treatment. In general terms, our experiment shares conclusions with those carried out by the authors mentioned above. And it should be noted that in this case, the difference is focused on the overweight avatar, as defended by most of the literature.

From a slightly more sectoral perspective, such as that defended by Mitra (2001) or Munasinghe et al. (2008) these differences would differ in terms of qualification required by the job. The salary difference in terms of physical form does not affect men and women in the same way. It is true that this difference caused by physical form decreases in jobs that require greater qualification, but in the case of men this discrimination in these positions it is much less than that found in women (Mitra, 2001). Munasinghe et al. (2008) defend the same point of view, the difference is greater when working in positions where women are easily replaceable, but when these positions require more training, women have lower salary differences.

From the same perspective defended previously by our results, we must say that we cannot observe in our sample decisions such a decrease in discrimination in the scenario that requires greater qualification "Ibex 35", perhaps due to the lack of information from the participant regarding the level of training required by this position.

Our research shows that this salary difference is greater in this scenario "ibex 35 company" between men and women. In fact, our econometric model finds significant differences in terms of gender in the "ibex 35" scenario for the question "Which of the following avatars

do you think receives the lowest salary?" in which the female overweight figure was chosen with a significantly higher probability compared to the rest of the scenarios.

From the results obtained from our research, we only observed one scenario in which for the question "Which of the following figures do you think receives the highest salary?" the choice of the avatar with weight within the average is less in the feminine treatment than in the masculine one. What a priori would suggest less discrimination in favor of the female gender in terms of physical form and the evaluation of wages, this scenario is "Evaluate the salary of the staff of a primary school."

The estimation of the econometric lead us to conclude that there are significantly moderate differences in the probability that the overweight woman is chosen for the best paid option. This conclusion suggests that the overweight woman in the "school" scenario has a greater probability of being chosen as the one who receives more income compared to the probability that this occurs in other scenarios. The literature regarding this result differs somewhat from the results found in our research. Umbach (2006) examines in his work the salary differences in the academic sector and concludes that these are greater for the female gender compared to the male gender, although it should be noted that there is a great lack of literature about the incidence of physical form in the academic sector by gender. Therefore, from our results in this regard, we can conclude that we did not find a salary difference that affects women more than men when it is filtered by physical form.

8. CONCLUSION.

The results obtained in this experiment reinforce the theory of wage discrimination suffered by both overweight and underweight individuals. Likewise, the branch of study of gender is reinforced, which shows how, not only in similar conditions, the female gender is discriminated with respect to the male, but also when there are already discriminating factors as absurd as weight, the gender becomes a ballast to time to not only get a job but to improve salary expectations.

The very nature of a process as complex as wage setting converts a scenario that much of the literature considers purely economic in a social process in which various factors intervene, among which discrimination of all kinds stands out.

This research shows how weight affects significantly in all the scenarios analyzed, despite their diversity in terms of wages. Scenarios as different as evaluating the worker at a neighborhood bar, or a worker at a major Ibex 35 company, show a common link based on

weight discrimination. Obese or underweight people face a handicap that sometimes equates to the loss of almost two years of study. Women present a more complicated perspective where they have to deal with an invisible and powerful enemy such as gender discrimination.

The theory about wage discrimination is broad, but it forgets certain points of importance, such as an issue as important today as physical condition. According to our results, the physical form is more than merely aesthetic in relation to the world of work. Just as a good educational path guarantees a certain priority over a poor educational evolution, the physical form plays a fairly important role in terms of achieving better wages.

This study serves as a complement to several previously mentioned studies that through an analytical study observe latent discriminatory patterns.

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