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## Structured behavioral interview as a legal guarantee for ensuring equal employment opportunities for women: A meta-analysis



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### ABSTRACT

Equal employment opportunities for women are a legal requirement in many legal environments, including the United States (US) and European Union (EU) legislations. In this context, indirect discrimination in the access to jobs is an illegal practice. For this reason, personnel selection procedures must be fair for protected-by-law groups. Specifically, gender discrimination is the focus of research on employment interviews. This article presents a meta-analysis of gender differences in the scores in structured behavioral interviews (SBI). A database was created consisting of studies conducted with real candidates and employees. Psychometric meta-analysis methods were applied. The results showed that the SBI is fair for women and men and does not show evidence of adverse impact and indirect discrimination. Implications for the practice of personnel selection are discussed and future research is suggested.

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## La entrevista conductual estructurada como garantía legal que asegura la igualdad de oportunidades laborales para la mujer: meta-análisis

### RESUMEN

La igualdad de oportunidades laborales para la mujer es un requisito legal en muchos marcos legales, como la legislación de Estados Unidos o de la Unión Europea. En este contexto, la discriminación indirecta en el acceso al trabajo es una práctica ilegal. Este es el motivo por el que los procedimientos de selección de personal deben ser justos para los grupos protegidos por ley. En concreto, la discriminación de género es el centro de investigación en las entrevistas de empleo. Este artículo presenta un metaanálisis de las diferencias de género en las puntuaciones de las entrevistas conductuales estructuradas (ECE). Se elaboró una base de datos compuesta de estudios realizados con aspirantes y empleados reales, aplicándose métodos metaanalíticos psicométricos. Los resultados indican que la ECE es justa para mujeres y hombres, no habiendo señales de efectos negativos ni de discriminación indirecta. Se comentan las consecuencias para la práctica en selección de personal, a la vez que se recomienda la necesidad de investigación futura.

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#### Palabras clave:

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Discriminación indirecta

In the domain of psychology applied to the legal context, litigation on employment discrimination is an area in which Industrial, Work and Organizational (IWO) psychologists are frequently required as expert witnesses (Borgida & Kim, 2007; Cascio, 2007; Gutek, 2007; Landy, 2005; Thornton III & Wingate, 2005) in order to testify whether or not adverse impact and sex discrimination has happened (Glick & Fiske, 2007; Gutek & Stockdale, 2005; Gutman, 2005). Typically, sex discrimination occurs when a woman

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receives unfair treatment in the workplace because of gender. The unfair treatment can occur, for instance, in terms of hiring, firing, layoffs, compensation level, job assignments, progress and promotion, and other terms and conditions of employment (Crosby & Sctockdale, 2007). However, as Sackett et al. (2010) pointed out in their review of the perspectives from twenty-two countries on the legal environment in relation to personnel selection, the legal context determines how IWO psychologists can approach to making an a priori case of discrimination. The influence of the legal context is especially relevant in the United States (US) and the countries of the European Union (EU).

In the US, the prohibition of employment discrimination was established in the Title VII of the 1964 Civil Rights Act. This act prohibits employment discrimination based on race, color, religion, sex, or national origin. According to Outtz (2005), race cases differ little from sex, religion, and national cases in terms of the legal elements involved.

In the EU, legally ensuring and warranting equal opportunities for men and women in all domains (i.e., social, political, economic, legal, and so on) has been one of the major challenges since the beginning (Hanges & Feinberg, 2010). Equality between men and women is a fundamental value of the EU, as mentioned in articles 2 and 3 of the Treaty on EU (Council of the European Union, 2015), in articles 8, 153, and 157 of the Treaty on the Functioning of the EU (Council of the European Union, 2015), and in articles 21 and 23 of the Charter of Fundamental Rights of the EU (European Union, 2012). Since its foundation, the EU has also adopted an important number of norms and acts that constitute the main basis of its policy of equality, among others, Directive 2000/78/EC (Council of the European Union, 2000), Directive 2002/73/EC (European Parliament & the Council, 2002), Directive 2006/54/EC (European Parliament & the Council, 2006) and Directive 2010/41/EU (European Parliament & the Council, 2010).

Moreover, in March 2010, the European Union Commission (EUC) adopted the Women's Charter (European Union Commission, 2010). In this Charter, the EUC renewed the commitment for equality between genders and insisted on the need to include equality between women and men in all its policies in a transversal way. On the other hand, the Council of the EU adopted a European Pact for gender equality for the period 2011–2020 (Council of the European Union, 2011). In this Pact, the Council proposes that the states and the European Union, among other things, adopt measures to close gender gaps at work and to promote a better work-life balance for women and men.

Equal opportunities are particularly relevant in the labor environment, in which findings of recently published studies showed women to be disadvantaged, both in terms of the job level to which they have access, and their working conditions (Bastida & Moscoso, 2015; Bettio & Verashchagina, 2014; Instituto de la Mujer, 2014; Instituto Nacional de Estadística, 2014; Morel, Palier, & Palme, 2012). In this context, to ensure and guarantee equal employment opportunities to women in relation to employment access is one of the keys to reducing this situation of inequality between genders. In this regard, a crucial issue is to know whether the procedures (e.g., tests, interviews, inventories, reference checks, and so on) used by organizations to attract and select future employees are legally sound.

### **Adverse Impact and Types of Discrimination in the Access to Employment according to the Legislation**

From a legal point of view, with regard to the access to employment, the concepts of adverse impact and discrimination must be taken into account from a perspective of equal employment opportunities. On occasions, it can produce systematic differences in the candidate assessments of a protected-by-law group during the

hiring processes. This phenomenon is named adverse impact and is independent of whether such differences can be considered as discriminatory or not. In itself, adverse impact is a neutral term, which reflects simply the possibility that an injustice against a particular social group can occur. With this in mind, it is necessary to take into account that a selection procedure (e.g., test, interview, and so on) is not biased and unfair because the members of the different subgroups simply obtain lower average scores than the majority group. In other words, when a selection instrument is used and produces adverse impact, it is not necessarily the case that this is discrimination (Aramburu-Zabala, 2001). It would be unfair discrimination when the members of a minority group obtain lower scores in the selection procedures but at the same time there are no group differences in their job performance scores (Arvey, 1979).

Discrimination can be of two types. On one hand, there is direct discrimination when the selection process treats an individual in a less favorable way because he/she is a member of a specific social group (e.g., women, immigrants, blacks, Latin-Americans, and so on). Therefore, this type of discrimination is the most obvious and is produced by the intention of the employer to discriminate against the members of social groups protected by law. On the other hand, there is indirect discrimination when an employer uses a selection procedure that, apparently, is neutral, but in which the members of a protected-by-law group (e.g., women) obtain systematically worst results in it, regardless of their job performance. Indirect discrimination is typically not intentional and more difficult to prove than direct discrimination.

In this respect, European laws, similarly to US laws, demand that the selection procedures that produce adverse impact must fulfill two requirements in order to be used without an accusation of indirect discrimination: (1) to be valid (i.e., that the procedure can predict future job performance), and (2) to be suitable (i.e., that there is no other similar procedure with equal or greater validity and that does not produce adverse impact). In this case, there would be a non-discriminatory adverse impact. However, if these two requirements are not fulfilled, the use of a procedure with adverse impact would be considered as discriminatory (Alonso, 2011; Aramburu-Zabala, 2001).

### **Personnel Selection Interviews**

Organizations have a large number of tools for selecting their employees. These tools not only produce different results regarding the quality of the selection process (e.g., in terms of reliability, predictive validity, and economic utility) but also could produce different results depending on the gender of the participants (Alonso, Táuriz, & Choragwicka, 2009; Aramburu-Zabala, 2001; Arvey, 1979; Hough, Oswald, & Ployhart, 2001). This article will be focused on the employment interview, as this is the most common procedure for hiring personnel (Salgado, Ones, & Viswesvaran, 2001).

Comparing all the procedures that can be used for personnel selection, the most current findings show that the employment interview is probably the most important technique, both in terms of the frequency of its use and its relevance for making decisions (Huffcutt, Culbertson, & Weyhrauch, 2013; Salgado & Moscoso, 2011). This finding has been confirmed across the world. For instance, Clark (1993) concluded that the unstructured interview was the instrument most used by companies from France, Germany, Italy, and United Kingdom. Shackleton and Newell (1994) found a similar result in another sample of companies of United Kingdom, France, Belgium, Germany, and Italy. Five years later, Ryan, McFarland, Baron, and Page (1999), in a study consisting of 959 organizations from 20 countries of the five continents, found that the interview was the most used procedure.

The results of the most recent studies on this issue concur with the previous findings. Similar results were found in New Zealand (Taylor, Keelty, & McDonnell, 2002), in Brazil (Pereira, Primi, & Cobêro, 2003), in United Kingdom (The Chartered Institute of Personnel and Development, 2004, 2011) and in Spain (Alonso, Moscoso, & Cuadrado, 2015), among other countries. However, Salgado and Moscoso (2002) have pointed out that interviews can be classified according to the content and the degree of structure. Content and structure factors have a tremendous impact on the psychometric properties of the interviews, but their results concerning the potential discrimination based on gender have not been sufficiently studied.

Salgado and Moscoso (2002, 2006), taking into account the type of question included in the employment interviews, have classified this procedure in two categories: conventional interviews (CI) and structured behavioral interviews (SBI). CI includes many different types of questions, mainly about credentials, achievements, biographical facts, technical knowledge, and self-evaluative information. Interviewers that use CI consider this type of questions necessary to assess the candidate. On the other hand, SBI mainly have questions focused on the behavior of the candidates in past situations similar to the situations that the new employee will be involved in the new job.

In comparing these two categories of employment interviews, SBI showed better empirical support in terms of reliability and predictive validity (Choragwicka & Moscoso, 2007; Conway, Jako & Goodman, 1995; Huffcutt et al., 2013; Moscoso & Salgado, 2001; Motowidlo et al., 1992; Saez, 2007; Salgado & Moscoso, 1995; Salgado & Moscoso, 2006; Salgado & Moscoso, 2011; Salgado, Moscoso, & Gorriti, 2004; Salgado, Gorriti, & Moscoso, 2007). The SBI focuses on assessing the real behavior in the past, asking candidates to describe what they have done in similar situations to the ones that can occur in the future job (Janz, 1982; Moscoso, Gorriti, & Salgado, 2007; Motowidlo et al., 1992; Salgado, 1995; Salgado & Moscoso, 1995; Salgado & Moscoso, 2011). Moreover, Janz, Hellervik, and Gilmore (1986) pointed out that the more recent and frequent the behavior, the more valid the interview.

The SBI can be defined by the following characteristics (Motowidlo et al., 1992; Moscoso et al., 2007; Salgado, 1995; Salgado & Moscoso, 1995, 2011): (1) it is based on the results of a job analysis, typically done with the critical incident technique, in order to identify the requirements of knowledge, ability, skill, and other important competencies for a good job performance; (2) it is composed of standardized questions about the behavior of the interviewee in similar past situations in order to permit the assessment of the applicant in relation to a specific competency which is considered relevant for the job; (3) the interviewer asks some questions to find out some details about the situation, interviewee behavior, and outcomes; (4) the interviewer can record the interview or take notes; (5) after asking all the questions, the interviewer reviews the recording or the notes and assesses the candidate using behaviorally-anchored rating scales (BARS); (6) the evaluations of the different job dimensions are averaged to calculate the overall score in the interview; (7) the same process is done with all the candidates; and (8) the hiring decision is made after all the interviews are done.

With regard to the psychometric properties of SBI, several meta-analyses have found that it is one of the selection procedures with the largest coefficients of reliability and validity, improving the results obtained by other interview types, especially unstructured interviews (Conway et al., 1995; Huffcutt & Arthur, 1994; Huffcutt et al., 2013; Salgado & Moscoso, 1995; Wiesner & Cronshaw, 1988). Specifically, Salgado and Moscoso (2006), summarizing and grouping the meta-analyses by Salgado and Moscoso (1995), McDaniel, Whetzel, Schmidt, and Maurer (1994), and Huffcutt and Arthur

(1994), obtained an operative validity coefficient of .64 for predicting job performance.

In spite of its psychometric properties, that make SBI one of the most powerful instruments for personnel selection (Salgado & Moscoso, 2008; Schmidt & Hunter, 1998), it is one of the types of interview least used by organizations (Alonso et al., 2015). Some practical reasons can explain the low usage of SBI. The first reason is that SBI requires that interviewers (and assessors) have previous training in this technique. A second reason is that the development and application of SBI is more expensive than other interviews (e.g., unstructured interviews) (Salgado & Moscoso, 2011). Furthermore, its generalizability is smaller due to the fact that it is based on a job analysis and, consequently, it only can be applied to jobs with similar dimensions. Unstructured and structured conventional interviews can be used in practically all types of jobs with some changes to the questions.

Despite these difficulties, the findings regarding the psychometric properties of SBI and the studies on its economic utility (Salgado, 2007) recommend and support the use of this technique in comparison with other interview types. Further support for SBI would come from the evidence that the use of SBI guarantees that there is no negative discrimination against women in the hiring processes. This point will be reviewed in the next section.

### Empirical Evidence on Indirect Discrimination towards Women in the Structured Behavioral Interview

There are at present a very small number of literature reviews on the potential adverse impact and discrimination against women in the employment interview. The first review, qualitative in nature, was carried out by Arvey (1979), who concluded that, on average, women received lower scores than men. A relevant characteristic of this review is that a large majority of the interviews analyzed were unstructured interviews and some of them were simulations. Nevertheless, Arvey's (1979) review posited the possibility that the most used instrument for making personnel decisions could negatively discriminate against women in a systematic way.

Two decades later, Moscoso (2000), in her review of the research on the selection interview, concluded that, in general, interviews produced less adverse impact than other selection procedures (e.g., ability tests) and that the smaller adverse impact of the interviews could be reduced with the use of SBI. Moscoso (2000) pointed out that research on this topic was very scarce at that time. Huffcutt, Conway, Roth, and Stone (2001) carried out the first meta-analysis on the adverse impact of interviews, finding that there were slight (and practically irrelevant) differences between men and women in the overall scores in the interview ( $d = 0.06$ ). In this study, analyzing the interviews according to the structure degree, Huffcutt et al. (2001) found that the structured interviews did not produce differences. However, unstructured interviews and low-structured interviews produced small differences ( $d = 0.23$ ) against women.

A decade later, Alonso (2011) conducted a meta-analysis to determine whether structured interviews produced adverse impact against women. Her results showed that SBI produced practically no gender differences. More recently, Levashina, Hartwell, Morgeson, and Campion (2014) found that men and women obtained the same average scores in structured interviews. This research was conducted with 9 studies, including experimental samples and field samples.

However, the three meta-analytic reviews have a series of limitations that suggest that a new meta-analysis is needed. Firstly, the number of individual studies is very small. Secondly, some samples were obtained in experimental contexts, in which the candidates were simulated (hypothetical ones). Thirdly, neither Huffcutt et al. (2001) nor Levashina et al. (2014) carried out a specific

meta-analysis of SBI. Finally, even though [Alonso's \(2011\)](#) meta-analysis provides results for the SBI, a large majority of the total sample came from only two studies. Consequently, the findings might be conditioned by the specific characteristics of these two samples.

Therefore, the goal of the current study is to extend the previous research (and specifically the meta-analysis by [Alonso, 2011](#)) in order to provide more robust findings, to confirm or reject whether the SBI is legally fair for women and, consequently, guarantees their access to employment in equal conditions to men. On the basis of the previous findings, we advance the following hypothesis:

### Hypothesis

The structured behavioral interview does not produce adverse impact against women.

## Method

### Literature Search and Coding Studies

The objective of the search was to find the largest number of studies on the relationship between interviewee's gender and score in the SBI in a real context of personnel selection. Therefore, in order to be included in this meta-analysis, studies had to fulfill the following conditions: (1) that it included the effect size of the gender on the interview score or the information to calculate it (e.g., *Ns*, means, and *SDs*, correlation between sex and interview score, etc.), (2) that the goal of the interview was to assess the fit of an employee to a specific job or to assess his/her potential suitability, and (3) that the study was not a simulation (i.e., real employees or candidates were assessed). To cover the literature on the relationship between interview and gender as exhaustively as possible and to prevent any bias in the inclusion of studies, we adopted a series of search strategies. First, a computer-based search was conducted in a large number of databases, including Google Scholar, Medline, ProQuest Dissertations & Theses, PsycInfo, SAGE, Tesco, Web of Science, and Wiley Online Library. Several single keywords and combination of keywords were used, including, on one hand, selection interview, employment interview, job interview, interview success, interview ratings, interview performance or hiring recommendations and, on the other hand, sex, gender, sex adverse impact, gender adverse impact, and sex or gender differences. Second, a manual article-by-article search of the articles published between 1975 and 2014 was carried out in a number of top-tier journals, including *Academy of Management Journal*, *European Journal of Work and Organizational Psychology*, *Human Performance*, *International Journal of Applied Psychology*, *International Journal of Selection and Assessment*, *International Journal of Human Resources Management*, *Journal of Applied Psychology*, *Journal of Applied Social Psychology*, *Journal of Business and Psychology*, *Journal of Occupational and Organizational Psychology*, *Journal of Occupational Behavior*, *Journal of Organizational Behavior*, *Journal of Social Psychology*, *Journal of Work and Organizational Psychology*, *Organizational Behavior and Human Decision Processes*, *Organizational Psychology Review*, *Personnel Psychology*, *Psychological Bulletin*, and *Sex Roles*. Third, the reference section of the articles and the meta-analyses on the topic were reviewed to find articles not identified with the previous strategies. Fourth, we contacted several researchers and asked for both published and unpublished papers on the gender and interview relationships.

By means of these four strategies we were able to create an initial database of 36 studies. However, some of the studies were excluded for the following reasons: (a) the interview was not an SBI; (b) the study reported that there were no differences between

men and women, but it did not provide information to estimate the effect size; and (c) the study reported the differences that were statistically significant in some dimensions, but did not report the differences that were not statistically significant. Consequently, we finally obtained 15 studies (with 19 independent samples) to be used in the meta-analysis, of which ten were articles, four were doctoral dissertations, and one unpublished manuscript (see Appendix for complete information). This number of studies is especially relevant when compared with [Alonso's \(2011\)](#) meta-analysis, the largest prior study on this issue, which used only seven studies.

The information of the studies was coded according to the guidelines of the American Psychological Association ([APA, 2009](#)). The database included the following information: (a) article reference: authors, year, journal; (b) sample characteristics (selection or promotion, job, country of the study, if the sample were students, applicants or incumbents); criterion measure; interview scores, ratio of accepted and rejected; invitation to a second interview; hiring proposal, research design, etc.; (c) interview reliability: internal consistency and inter-rater coefficient; (d) value of range restriction, *u*, or, information to estimate it (e.g., proportion of men and women in the initial and final samples); (e) effect size or data to estimate it (e.g., sample size, mean and *SD* of women and men; correlation between interview and gender; *F*, *t*, and so on).

### Estimation of Effect Sizes

Having completed the data base, we obtained an effect size coefficient for each independent sample. Based on the suggestion by [Schmidt and Hunter \(2014\)](#); see also [Magnusson, 1977](#)), point-biserial correlation coefficients were corrected for attenuation due to the fact that one variable is continuous and another is dichotomized. When the proportion of cases is the same in both groups, then the point-biserial correlation is 80% of the true correlation. Next, these effect sizes were transformed into Cohen's *d*. Finally, we corrected the sign of the effect sizes taking into account that a negative sign would mean a favorable result for women and a positive sign would mean that the results were favorable to men.

### SBI Inter-rater Reliability

From a personnel selection point of view, the most relevant reliability coefficient is an inter-rater coefficient ([Salgado & Moscoso, 1995](#), [Schmidt & Hunter, 1996](#); [Schmidt, Le & Ilies, 2003](#)), because this coefficient controls for the majority of the measurement error sources. In the current meta-analysis, several studies do not provide information on the interview interrater reliability. Therefore, we developed an empirical distribution based on the coefficient included in the studies.

The average interrater reliability of the SBI appears in [Table 1](#), firstly the average interrater reliability obtained with the totality of studies included in the meta-analysis, and next, the average inter-rater obtained if the largest sample is not included. In addition, [Table 1](#) also reports the interrater coefficients found in the prior meta-analysis on this topic (i.e., [McDaniel et al., 1994](#); [Salgado & Moscoso, 1995](#); [Salgado et al., 2004](#); [Taylor & Small, 2002](#)).

### Range Restriction of SBI scores

In order to check if the interview scores were affected by range restriction, we compared the initial proportion of women and men with the final proportion included in each study. According to this criterion, a smaller proportion of women in the final sample with respect to the initial sample would mean that there was range restriction.

[Table 2](#) reports the frequency of the range restriction values found in the studies included in this meta-analysis. As we can see,

**Table 1**  
Inter-rater Reliability Coefficients of SBI in this Research Study and in the Previous Meta-analysis.

	All Samples			Without Large Samples			McDaniel et al., 1994		Salgado & Moscato, 1995		Salgado et al., 2004		Taylor & Small, 2002	
	<i>K</i>	$r_{xx}$	$SD_r$	<i>K</i>	$r_{xx}$	$SD_r$	<i>K</i>	$r_{xx}$	<i>K</i>	$r_{xx}$	<i>K</i>	$r_{xx}$	<i>K</i>	$r_{xx}$
SBI	6	.76	.08	5	.74	.08	167	.84	20	.75	20	.83	13	.76

Note. *K* = number of interrater coefficients;  $r_{xx}$  = average interrater reliability;  $SD_r$  = standard deviation of interrater reliability.

**Table 2**  
Frequency of the Range Restriction Values in this Meta-analysis.

u	Frequency
0.840	1
0.870	1
1.000	14
1.270	1
<i>M</i> : 0.999	
<i>SD</i> : 0.084	

Note. u = value of range restriction; *M* = mean; *SD* = standard deviation.

there is a compensation effect, so that the average *u* is .999. Therefore, it can be considered that there is no range restriction in the final sample.

Lastly, we conducted a psychometric meta-analysis using the software package developed by Schmidt and Le (2004), based on the meta-analysis methods of Schmidt and Hunter (2014). Psychometric meta-analysis estimates the amount of the observed variance that is due to artifactual errors. In the current meta-analysis, the artifactual errors taken into account were sampling error, interview reliability, and gender range restriction.

Among the samples included in the meta-analysis, there are two studies with a total sample larger than 10,000 individuals (McCarthy, Van Iddekinge, & Campion, 2010; Sacco, Scheu, Ryan, & Schmitt, 2003). This characteristic makes them very different from the rest of samples of the meta-analysis. Considering that the two samples comprise 30,320 subjects, i.e., 88.8% of the total sample, we conducted the meta-analysis twice, once with the total sample size and the second time excluding these two large samples. In this way, we were able to examine if these large-sample studies determined the average effect size.

## Results

Table 3 presents the meta-analytic results of the differences between men and women in the SBI. The results of the meta-analysis conducted with all the studies and samples appear in the first row and the results of the meta-analysis carried out without the two largest samples appear in the second row.

From left to right, the first column shows the number of effect size coefficients (*K*), the second column shows the total simple size (*N*), the third column is the average effect size weighted by simple size (Cohen's *d*), and the fourth column shows the observed variance of the observed effect size ( $S^2_d$ ). The two columns that follow show the sampling error variance ( $S^2_{ART}$ ) and the percentage of

variance explained by the artifactual errors. Finally, the three last columns show the corrected effect size ( $\delta_{cy}$ ), the standard deviation of the corrected effect size ( $SD\delta_{cy}$ ), and the 90% credibility value (90%CV).

The findings show that the effect size of the difference of the SBI scores of women and men is small (Cohen, 1977), but favorable to women. The meta-analysis conducted with the total sample size reports a  $d = -0.16$  ( $K = 19$ ,  $N = 34,130$ ). The percentage of observed variance accounted for by the artifactual errors was 11.63% and the 90% credibility value was .03, which includes zero as a potential value.

When the meta-analysis was conducted without the coefficients of the two largest samples, the corrected average effect size was similar to the previous one. More specifically, we found a Cohen's *d* of  $-0.13$ , the percentage of explained variance accounted for by artifactual errors was 40.43% and the 90% credibility value was .11, which included 0. Taking into account these findings, we can affirm that the conclusions are the same as with the whole database. In other words, the differences between the scores obtained by women and men in the SBI are very small and practically irrelevant.

In summary, the results support the hypothesis stated, and they agree with the results previously found by Alonso (2011), who had found that when candidates are evaluated with the SBI, it does not produce adverse impact against women. Therefore, the SBI guarantees their access to employment in equal conditions to men.

## Discussion

This study has found that the use of the SBI does not show relevant differences in the interview scores received by men and women. This fact implies that the SBI does not produce adverse impact against women. Therefore, it can be said that the use of this tool can help to ensure that women are not indirectly discriminated against during the recruitment process.

This research has contributed to the literature in several ways. First, the most relevant contribution is that the results serve as evidence that the SBI is not biased against women (i.e., there is no adverse impact evidence) and that the SBI does not indirectly discriminate against women. This is a relevant contribution given that, as was mentioned before, facing a possible discrimination lawsuit, the US and European regulation establish that, in relation to burden of proof (see as an example the Directive 2006/54/EC; European Parliament & the Council, 2006), the defendant has to prove that the tool used does not produce that effect. Second, the results suggest that companies have an additional reason to opt for the use of the SBI. Although the selection interview is the tool most used by organizations worldwide to recruit employees, the most widely

**Table 3**  
Results of the Meta-analysis of the Differences between Men and Women in the SBI Scores.

	<i>K</i>	<i>N</i>	$\bar{d}$	$S^2_d$	$S^2_{ART}$	%VE	$\delta_{cy}$	$SD\delta_{cy}$	90% VC $\delta_{cy}$
All studies	19	34,130	-0.14	0.0195	0.0023	11.63	-0.16	0.15	.03
Without large-sample studies	17	3,838	-0.11	0.0446	0.0180	40.43	-0.13	0.19	.11

Note. The correlation with a negative sign means a lower score in the group of men; *K* = number of studies; *N* = sample size;  $\bar{d}$  = average effect size weighted by sample size;  $S^2_d$  = observed variance;  $S^2_{ART}$  = variance accounted for by artifactual errors; %VE = percentage of observed variance accounted for by artifactual errors;  $\delta_{cy}$  = corrected effect size;  $SD\delta_{cy}$  = standard deviation of the corrected effect size; 90% VC $\delta_{cy}$  = 90% credibility value.

used interview type, i.e., the unstructured interview, is not the most appropriate from the evidence available (Alonso et al., 2015). The extent of the use of SBI in organizations is lower than that of the conventional interview, despite the fact that it is already known to be one of the best interviews, as demonstrated by its psychometric properties. Now, we also know that its use does not produce adverse impact against women. Therefore, the results of this meta-analysis can be used by organizations as evidence in the case of lawsuits. This is an important additional reason why the use of this tool should be increased to the detriment of other types of interview.

### Practical Implications of the Findings and Suggestions for Future Research

The findings have implications for the practice of human resource management. In Europe and in other countries (e.g., US, Canada), surveys continue to show that women are disadvantaged in comparison to men in the labor market. This disadvantage is particularly observed in the great difficulty women experience in accessing management positions, especially at the highest levels, which are occupied mostly by men (Bastida & Moscoso, 2015; Catalyst, 2000, 2016).

At the level of labor market entry, data published by Eurostat (2015) reveal a remarkable increase in the proportion of women in employment in the EU-28. However, comparing rates for men and women, the percentage of men was consistently higher across all of the EU-28 Member States in 2014. Moreover, there are also important differences in the conditions under which women access employment. For example, data shows that women are employed in part-time work to a much higher proportion than men (Eurostat, 2015). In the US, the percentage of the women in the labor market is quite similar to men (United States Equal Employment Opportunities Commission, 2016). However, there are bigger differences in rates when the data are analyzed by hierarchical level, as women remain underrepresented among leaders and top earners in several fields (Stone, 2013; United States Equal Employment Opportunities Commission, 2016).

Despite the EEO legislation, as Burke and Major (2014) have pointed out, talented women continue to have difficulty advancing their careers worldwide. They face multiple barriers in their advancement in organizations (Bastida & Moscoso, 2015). For example, Stone (2013) indicated that women make up only 14 percent of executive officers and 8 percent of top earners at Fortune 500 firms in the US. Furthermore, a recently published study by Catalyst (2016), conducted with a sample of 1,660 business school graduates, concluded that men get more of the critical assignments that lead to advancement in their professional careers than women. Specifically, men's projects had budgets twice as big as women's and with three times as many staff members. Taken together, the studies cited suggest that women's access to employment and executive jobs continues to be an unresolved difficulty. A potential explanatory variable for the above mentioned differences is the kind of assessment procedures used during the selection process, as some of them can produce gender discrimination (Gutek & Stockdale, 2005; Tippins, 2010).

Taking into account that the interview is the most used tool for selection and that it has the largest influence on the hiring decision (Alonso et al., 2015), the findings of this study are relevant because they demonstrate that the use of SBI can help to reduce the problem of discrimination against women in the labor market. In short, in addition to the advantages that this tool offers to the company, i.e., validity and economic utility, its use would also contribute to improving the situation of women in the labor market, facilitating their incorporation on equal terms with men. Future research

should verify if these results are being taken on board by practitioners, so that the existing gap between researchers and managers of human resources is reduced (Anderson, Herriot, & Hodkingson, 2001). In other words, it would be interesting to discover whether there has been an increase in the use of the tools that have more empirical support and produce less adverse impact. Specifically, in connection with this investigation, researchers should be interested in checking whether indeed the increased use of SBI by organizations around the world is being found.

### Limitations of this Research

The current research has some limitations that should be noticed by readers. A first limitation is that, despite the fact that the total sample is very large (over 34,000 individuals), the number of European studies is relatively small. Cultural differences and different laws could affect the results. Therefore, we suggest updating the meta-analysis when the number of new studies from European countries is enlarged. A second limitation is that the number of different jobs and occupations is small too. The level of job complexity has been found to have an important impact on the validity of employment interviews (Huffcutt, Conway, Roth, & Klehe, 2004). It could be of interest to examine if job complexity also affects adverse impact. Finally, within the same job complexity level, gender stereotypes could affect the results because jobs considered primarily masculine could be related with lower scores for women (Arvey, 1979; Posthuma, Morgeson, & Campion, 2002).

In summary, this research demonstrates that the SBI does not produce adverse impact against women. Consequently, practitioners of human resource management and personnel selection should be aware of the benefits of using the SBI in the hiring processes for three reasons: firstly, the SBI has larger reliability and validity than any other type of interview. Secondly, the SBI is perceived favorably by the applicants. Finally, now we have the evidence to affirm that the SBI contributes to guaranteeing equal employment opportunities for women and men.

### Conflict of Interest

The authors of this article declare no conflict of interest.

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### Appendix

#### Studies Included in the Meta-analysis

	<i>N</i>	<i>d</i>	<i>r</i> <sub>xx</sub> ( $\alpha$ )	<i>r</i> <sub>xx</sub> (Interrater)	<i>u</i>
Alonso, Cuadrado, Salgado, and Moscoso (2014)	63	-0.22	.79	-	1.00
Barrick, Swider, and Stewart (2010)	189	0.25	.84	-	0.84
Berges (2010)	226	-0.30	-	.83	1.00
De Soete, Lievens, Oostrom, and Westerveld (2013)	245	-0.08	.64	-	-
Grove (1981)	181	0.32	-	.69	1.00
Klehe and Latham (2006)	167	-0.03	-	.90	1.27
Kluemper (2006)	81	-0.03	-	-	1.00
	30	-1.08	-	-	1.00

## Appendix A (Continued)

	N	d	r <sub>xx</sub> (α)	r <sub>xx</sub> (Interrater)	u
McCarthy et al. (2010)	18,285	-0.25	.86	.82	1.00
Motowidlo et al. (1992)	97	0.31	.85	.63	1.00
	164	0.19	.79	-	0.87
	872	-0.23	.69	-	1.00
	162	-0.24	.84	-	1.00
Pulakos and Schmitt (1995)	464	-0.05	-	-	1.00
Sacco et al. (2003)	12,007	0.01	.84	-	1.00
Saez (2011)	173	0.00	-	.92	1.00
Salgado et al. (2007)	209	-0.38	-	.93	1.00
Silvester and Dykes (2007)	415	-0.25	-	-	1.00
Walters (2010)	100	-0.08	-	-	1.00

Note. N = sample size; d = effect size of the differences between men and women; r<sub>xx</sub> (α) = internal consistence reliability; r<sub>xx</sub> = Interrater reliability; u = range restriction.

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