### Reducing discrimination against job seekers with and without employment gaps

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### Abstract

Past research shows that decision-makers discriminate against applicants with career breaks. Career breaks are common due to caring responsibilities, especially for working mothers, thereby leaving job seekers with employment gaps on their résumés. In a pre-registered audit field experiment in the United Kingdom (N = 9,022), we show that rewriting a résumé so that previously held jobs are listed with the number of years worked (instead of employment dates) increases callbacks from real employers compared to résumés without employment gaps by approximately 8%. A series of lab studies (an online pilot and two pre-registered experiments; N= 2,650) shows this effect holds for both female and male applicants—even when compared to applicants without employment gaps—as well as for applicants with less and more total job experience. The effect is driven by making the applicant's job experience salient, not as a result of novelty or ease of reading.

### Introduction

Many people experience voluntary or involuntary career breaks at some point during their working lives,<sup>1</sup> leading to employment gaps on their résumés. Such employment gaps may be caused by external shocks (e.g., sickness or downsizing due to the COVID-19 pandemic;<sup>2</sup> especially working mothers<sup>3</sup>) as well as career and lifestyle choices. Women are particularly affected by employment gaps when they take family-related leaves; for example, in the United Kingdom (U.K.), over 70% of previously full-time working women take between 6 and 18 months out of paid employment after the birth of a child.<sup>4</sup>

Even when employment gaps are transitory, workers may face discrimination upon work re-entry if these gaps are evident on their résumés.<sup>5-10</sup> Whereas traditionally structural unemployment (e.g., skill shortages) is a major concern to the economy and society at large,<sup>11</sup> frictional unemployment (e.g., short gaps between jobs or short-term leave) may pose challenges for individuals – in particular, the scarring effects of short-term unemployment gaps.<sup>12</sup> Indeed, this underemployment in itself is a problem due to inefficiency, but could also lead to more structural problems if those job seekers decide to leave the labor market permanently. While penalties associated with employment gaps have been shown to affect male and female workers,<sup>6,7,13</sup> motherhood penalties may particularly penalize women for childcare-related leaves.<sup>5</sup> There is a long literature noting the scarring effects of gaps in employment and a closely aligned literature exploring the impact of maternity leave and adjacent career breaks on individuals' career trajectories.<sup>12</sup> In fact, these additional barriers to re-entry for mothers may contribute to the well-known, persistent gender wage gap<sup>12,14-16</sup> as well as to women's lower representation in the upper echelons of companies.<sup>17-20</sup> These effects are likely compounded further by other factors that also contribute to gender inequalities in the labor market, including occupational segregation and differential job entry,<sup>21,22</sup> hiring agencies' preemptive sorting by gender and industries,<sup>23</sup> bias and discrimination within the workplace,<sup>24</sup> negotiation decisions,<sup>25</sup> and differential career advancement.<sup>26</sup>

In this paper, we focus on an early stage of the process: the initial screening of résumés the first "gateway"—when companies hire for a new position. To study discrimination during the hiring process against workers with employment gaps, researchers have in the past turned to audit studies. Audit studies<sup>27</sup> have been used extensively to examine the effects of gender (i.e., discrimination against women<sup>28,29</sup>), race (i.e., discrimination against non-whites<sup>30</sup>), unemployment (i.e., discrimination against those who are unemployed),<sup>6,7,31,32</sup> and more recently, parenthood and childcare-related leave (i.e., discrimination against parents taking time out of the workforce to care for their children <sup>5,10,33</sup>); for a comprehensive register of discrimination of various characteristics during hiring in audit experiments, see Baert (2018).<sup>27</sup> These studies measure the effects of applicant characteristics on "callbacks" (i.e., an employer invitation to the next stage in the recruitment process—often a job interview).

While reduced opportunities for workers with employment gaps have been widely documented, little research has explored ways to overcome these barriers and biases. Some research has focused on reducing bias towards female applicants and working mothers. Of these interventions, employer strategies require manager training,<sup>34-35</sup> suppressing biases and taking more time to review applicants,<sup>36</sup> or overhauling current assessment processes.<sup>37</sup> Employee strategies encourage applicants to explain their employment gaps,<sup>8,38,39</sup> highlight volunteer work,<sup>40</sup> or deliberately manage others' impressions.<sup>28,41</sup> Although these interventions have shown promise, they also tend to require significant extra effort from applicants and employers; some of these strategies may even create backlash or social penalties by creating incongruence with behavioral expectations for women.<sup>41</sup>

To reduce these burdens, we develop and test a costless intervention applicants can adopt to facilitate workforce re-entry without backlash. Our intervention is informed by research from psychology and the field of judgment and decision-making, which shows that people inherently categorize people into groups, particularly when the category is easily accessible and representative.<sup>42,43</sup> Stereotype activation is an automatic process, but reliance on these stereotypes is also greater in contexts of high uncertainty and high subjectivity,<sup>44-47</sup> which characterizes many personnel selection processes.<sup>48</sup> In addition to reliance on stereotypes (e.g., mothers are less committed to their jobs and less productive than their childfree and male counterparts, unemployed applicants are lower quality and less productive than employed persons, etc.), employers may also be comparing applicants to prototypical workers.

We therefore hypothesize that employees with employment gaps contrast with conceptions of the "ideal worker" who begins employment in early adulthood, continuing fulltime without interruption for several decades.<sup>49</sup> Whether it is a mother who has taken a caregiving leave or a person who became unemployed due to job loss during the COVID-19 pandemic—the two most common reasons for disrupted employment—career breaks undermine decision-makers' impressions of applicant job experience by breaking this pattern of continuous employment.<sup>50-51</sup>

Employers may still attend to career breaks (and may even discount previous work experience) despite the break's potential irrelevance for the quality of the worker; we therefore argue that it is desirable to obscure this information from decision-makers. Our intervention removes the career-break information from job-seekers' résumés, while still conveying jobrelevant information. Specifically, to decrease the salience of the employment gap and to increase the salience of applicant experience, our intervention displays work experience in a different format: the number of years of experience for each job held (see Supplementary Information, Supplementary Figure 1B) instead of the standard "date format" (Supplementary Figure 1A). That is, instead of an applicant's résumé listing the two calendar dates between which the applicant started and finished a job (e.g., "March 2011 - March 2016"), the treatment résumé displays a single number indicating the number of years the applicant worked in each job (e.g., "5 years"). As a result, the intervention draws attention to the applicants' job experience while also obfuscating employment gaps by omission.

We hypothesize that our intervention will increase the likelihood of a qualified applicant advancing to the next stage of selection (i.e., receiving a callback, Study 1, perceived hireability, Studies 2-3). To test our theorized mechanism—perceived job experience—we also measure recalled years of experience (Studies 2-3). A related but separate research question which we do not address here is whether applicants in the treatment group are treated differently from the control group once they progress past the first gateway (e.g., at an in-person interview). While unequal treatment can still occur at the interview stage,<sup>52-54</sup> other research aims to reduce bias during this stage of the application process.<sup>55,56</sup> The powerful, lasting effects of first impressions and the necessity of passing the first gateway to get to the second gateway<sup>57</sup> further underlines the importance of the current research.

Given the high prevalence of employment gaps among women due to family-related leave—which also remains a critical contributor to workplace gender inequalities—a key focus of our studies is on mothers returning to work. Studying discrimination against mothers (and fathers) has been a particular focus in the literature. Notably, Correll and colleagues found evidence of discrimination against mothers who received half as many callbacks as childfree women but no callback penalties for fathers (vs. childfree men).<sup>5</sup> Weisshaar (10) found no

statistically significant gender differences in callbacks. However, employed parents (vs. unemployed parents who were laid off) received approximately 1.8 times more callbacks, and were approximately three times more likely to get a callback (vs. parents who voluntarily left to take care of their children).<sup>10</sup> Although our later studies also include men, this was primarily intended to test potential boundary conditions of our intervention. However, results from these additional studies show that the intervention appears to be useful for a range of job seekers: for men and women with various reasons for employment gaps and lengths of job experience.

#### Results

In a real-world setting with actual employers, Study 1 revealed that displaying the number of years of job experience (Years condition) on a résumé garnered more callbacks for job-seeking mothers than any other condition (Figure 1). The other conditions are No Gap, where the résumé had the most recent employment date running from "July 2015 to Present;" an Unexplained Gap condition, where the last date in employment ending two and a half years before the résumé was sent out, and an Explained Gap condition, where the last date in employment ended two and a half years before the résumé was sent out, followed by the sentence, "Left to become a full-time mother and look after my children."

Using linear probability models controlling for working pattern and region (as described in the pre-registration), both the Unexplained Gap (b = -0.049, SE = 0.014, t(9003) = -3.52, p < 0.001; d = -0.10, 95%CI[-0.18, -0.02]) and Explained Gap (b = -0.050, SE = 0.014, t(9003) = -3.61, p < 0.001; d = -0.10, 95%CI[-0.18, -0.02]) conditions led to significantly lower callbacks than the Years condition. Furthermore, even the No Gap condition, which served as a conservative benchmark, received fewer callbacks (b = -0.029, SE = 0.014, t(9003) = -2.07, p =0.038; d = -0.06, 95%CI[-0.14,0.02]) than the Years condition. All results hold when including job types and county fixed effects, as well as when using a logistic regression model (Supplementary Table 2B). In sum, and as predicted, the redesigned résumé improved job prospects for mothers returning to paid employment in a large-scale field experiment, even when compared to similar mothers without employment gaps.



**Figure 1. Callback rates by condition**. The graph above shows the percent of callbacks per condition. Using a linear probability model, we find that the Years condition (N = 2,255) received significantly more callbacks than the No Gap condition (N = 2,255), the Explained Gap condition (N = 2,256) and the Unexplained Gap condition (N = 2,256). The error bars represent standard errors from the mean. The Unexplained Gap (b = -0.049, SE = 0.014, t(9003) = -3.52, p < 0.001; d = -0.10, 95%CI[-0.18, -0.02]) and Explained Gap (b = -0.050, SE = 0.014, t(9003) = -3.61, p < 0.001; d = -0.10, 95%CI[-0.18, -0.02]) conditions led to significantly lower callbacks than the Years condition. Furthermore, even the No Gap condition, which served as a conservative benchmark, received fewer callbacks (b = -0.029, SE = 0.014, t(9003) = -2.07, p = 0.038, d = -0.06, 95%CI[-0.14,0.02]) than the Years condition. These results can also be found in Supplementary Table 2A.

Our first study offers evidence that the Years intervention led to more callbacks for applicants in a real-world setting with real employers. To better understand the mechanism through which the Years résumé operates, we turn to controlled online vignette studies.<sup>58</sup> We were particularly interested in capturing how the Years intervention is perceived along a number

of dimensions (measured through Likert scales, see Methods below) in contrast to the standard résumé, although we also sought to capture a hypothetical proxy for our outcome variable (callback) in the field study. We used a "hireability" outcome,<sup>59</sup> measured on a scale from 0-100, which captured the likelihood that the study participant would advance the applicant to the next stage of the application process.

We first explored the possible mechanisms with an online pilot study, in which we found no evidence in support of the most parsimonious explanations, namely, that the Years treatment is seen as easier to read (b = 0.08, SE = 0.15, t(248) = 0.51, p = 0.61; d = 0.01, 95%CI[-0.34,0.36]) or more novel (b = 0.01, SE = 0.16, t(248) = 0.06, p = 0.95; d = 0.06, 95%CI[-0.30, 0.41]). Suggestive evidence for the mechanism emerged as increased perceptions of overall applicant experience in the treatment (b = 0.37, SE = 0.12, t(248) = 3.19, p = 0.002; d = 0.40, 95%CI[0.04,0.76]) and years of applicant experience that participants recalled (b = 0.59, SE =0.29, t(248) = 2.00, p = 0.047; d = 0.25, 95%CI[-0.11,0.61]). For the full regression results, see Supplementary Table 3.

Our pre-registered Study 2 aimed to test this mechanism of increased perceptions of experience more explicitly and with a larger sample (N = 800). Study 2 was similar in many ways to Study 1 but differed from it in that we expanded it to also include résumés from male applicants. In particular, because the intervention in Study 1 was successful for applicants without an employment gap, we also sought to test if the intervention would be moderated by, or would interact with, applicant gender.

Study 2 replicated and extended the effect of the Years condition, demonstrating that there was no statistically significant moderation by applicant gender: the redesigned résumé led applicants to be evaluated as more likely to be hired than applicants using a standard résumé, both when controlling for applicant gender (treatment: b = 2.13, SE = 0.94, t(758) = 2.25, p = 0.025; d = 0.16, 95%CI[-0.04,0.36]; applicant gender: b = -1.31, SE = 0.94, t(758) = -1.39, p = 0.17; d = -0.10, 95%CI[-0.30,0.10]; see Supplementary Table 4A, columns 1 and 2) and when including an interaction term between applicant gender and the intervention (treatment: b = 3.29, SE = 1.33, t(757) = 2.47, p = 0.01; gender: b = -0.12, SE = 1.35, t(757) = -0.09, p = 0.93; and treatment \* gender interaction: b = -2.34, SE = 1.89, t(757) = -1.24, p = 0.22; see Supplementary Table 4A, column 4 shows the robustness of the results by including both the interaction term and job fixed effects, while column 5 shows

robustness by additionally excluding participants whose responses were outliers in the top 1% for the variable of years recalled.

We also confirmed the role of years of experience as a key mechanism: While the actual amount of job experience was 10 cumulative years for applicants in both conditions, participants who evaluated a résumé in the Years treatment more accurately recalled the number of years of experience that the applicant had (M = 9.41, SE = 0.34) than those in the standard résumé condition (M = 8.35, SE = 0.24; b = 1.06, t(759) = 3.16, p = 0.002; d = 0.23, 95%CI[0.03, 0.43]). This finding held after controlling for applicant gender and job type (Supplementary Table 4B) and was not significantly moderated by either or both factors.

In our pre-registration, we said that we would exclude those who failed the gender manipulation check because we figured that those individuals would not be paying sufficient attention to the task at hand. For robustness, we provide the intention-to-treat (ITT) analysis without those exclusions; however, we expect adding in these additional inattentive participants would introduce noise to our analysis. In the ITT analysis, the treatment effect on applicant advancement becomes slightly marginal in two specifications (Supplementary Table 4C: p = 0.054 in our baseline specification with the treatment dummy in column 1; and p = 0.056 with job fixed effects in column 2) and remains significant in the two remaining specifications (Supplementary Table 4C: p = 0.021 when we include the interaction term in column 3; and p = 0.021 when we include both the interaction term and job fixed effects in column 4). Furthermore, in the ITT analysis, the treatment effect on recalled years of applicant experience is significant across all specifications (Supplementary Table 4D). In sum, the findings from the robustness analyses are broadly consistent with our pre-registered analyses, although the estimates in some specifications are noisier, which we discuss in more detail below.

Finally, we sought to explore a policy-relevant boundary condition of the intervention. As the Years intervention focuses hiring managers' attention on applicants' amount of accumulated experience, it is plausible that the effect becomes less pronounced for more experienced workers (whose prior experience may be sufficiently long to be imprinted on hiring managers even with the standard résumé) or for less experienced workers (whose prior experience is too short to be highlighted effectively with the Years intervention).

Our pre-registered Study 3 (N = 1,600) demonstrated that neither of these potential boundary conditions is of particular concern: the Years intervention worked successfully for

applicants with 5 years or 15 years of experience, increasing hireability for applicants with fewer years of experience (5 years) (b = 2.36, SE = 1.03, t(762) = 2.29, p = 0.023; d = 0.17, 95%CI[-0.02, 0.32], Supplementary Table 5A, column 1) and with a greater number of years of experience (15 years) (b = 2.21, SE = 0.99, t(755) = 2.23, p = 0.026; d = 0.16, 95%CI[0.02, 0.29], Supplementary Table 5A, column 2). In our pre-registration, we said that we would exclude those who failed the gender manipulation check; however, for robustness, we include the intention-to-treat analysis without those exclusions (Supplementary Table 5B). All results remain significant except the probability of applicant advancement for 15 years of experience, which is marginal (p = 0.052). In sum, the findings from these robustness analyses are broadly consistent with our pre-registered analyses.

### Discussion

While the onus should not be on unemployed applicants to prevent others' bias against them, ample evidence has demonstrated that applicants with employment gaps face lower employment prospects, and therefore would benefit from seeking ways to remain competitive when re-entering the workforce. For working mothers in particular, a frequently recommended strategy is to "explain the gap."<sup>39</sup> Despite this proactive attempt to reframe the conversation highlighting the skills, dedication, and hard work needed to be a caregiver—we found no empirical support that this strategy works any better than an unexplained gap in our large-scale audit experiment in Study 1 (see results in Supplementary Table 2C). However, our results from the field experiment offer applicants a promising and effective strategy to overcome barriers to work re-entry. Low-effort and costless, our intervention replaces the standard employment dates on the résumé with the length of time of employment and thereby highlights applicants' experience to prospective employers, eliminating employment gap penalties that hinder these applicants' advancement beyond the first gateway of the selection process. Furthermore, by conducting this study in a field setting, we prioritize high external validity. However, in a field setting it can be more difficult (and more expensive) to test mechanism and boundary conditions. Therefore, we combined these findings with additional studies in a more controlled "online lab" setting for Studies 2 and 3.60

Given the positive callback outcomes of the redesigned résumé for women in Study 1 compared to both no-gap and gap résumés, we expanded this research to also include male

applicants. In an online study, we tested and found that the intervention works well; also, its success is not moderated by the gender of the applicant, even when compared to résumés without an employment gap. These results suggest that résumés could be improved for a variety of applicants. And while there was no evidence that the treatment had an effect on perceptions of novelty or ease of reading, Study 2 demonstrated that the redesigned résumés facilitated reviewers' recall of applicants' years of job experience. Our final Study 3 provided additional evidence that this treatment can work for applicants with shorter and longer job experience, further suggesting that this intervention is fairly generalizable for various types of applicants. Because findings from our field studies and online vignette studies converge, we believe this is promising for the validity of our results.<sup>60</sup>

Our research makes several contributions. First, this intervention provides a blueprint for how the judgment and decision-making literature can theoretically and practically contribute to practical interventions in the real world: by taking into account the mental machinery of hiring managers, we show how the kinds of mental shortcuts that can lead to bias (e.g., seeing only gaps in employment) can instead be redirected to focus on positive associations (e.g., helping hiring managers appreciate applicants' accumulated experience). Our research further contributes to the literature on gender discrimination, demonstrating a costless way for returning working mothers to show their potential to hiring managers and have a chance to proceed past the first gateway. Finally, our research contributes to understanding the wider experiences of discrimination for men and women who were temporarily unemployed. Helping people return to work after a prolonged unemployment spell is critical for public policy and social welfare support processes.

While this intervention predicted more callbacks and greater hireability, it is possible that this progress could be undone later in the interview process. For example, hiring managers might inquire about the exact dates of employment during an interview and, if learning about an employment gap, treat these applicants more negatively. However, it is also possible that interviewers rely less on stereotypes at this later stage, thus granting applicants a fairer, more merit-based opportunity. We encourage future research to explore this possibility. Furthermore, since hiring managers seem to assume that applicants with the standard "dates" résumé have less experience than those with the "years" résumé, future research should also attempt to quantify exactly how many years of experience the intervention can compensate for.

Our studies necessarily involved several design choices that other researchers may choose to explore differently. First, we focused on between-subject designs for our studies. While both between-subject and within-subject designs have their respective strengths and weaknesses, by not exposing participants to both treatment and control sequentially, the between-subject design is often a "cleaner" if statistically less efficient test of causality.<sup>61,62</sup> On the other hand, we cannot speak to whether the same decision-maker would make different choices between the two résumés, which we encourage future research to explore. An additional consideration for choosing the between-subject design in the field context was that it reduces the burden on each individual employer (i.e., the same employer is not sent multiple fictitious résumés). Second, we chose to replicate our field findings using online subject samples. While moving from the field into the "online lab" reduces external validity, it also offers more experimental control and the potential to explore underlying mechanisms (e.g., via survey scales).<sup>63</sup> We chose to run our studies on Prolific Academic because it enabled us to reach a sample of working adults in the United Kingdom, which was similar to our field experiment sample.<sup>64</sup> Additionally, recent research on data quality across multiple platforms has shown Prolific to be of significantly higher quality than alternative platforms.<sup>65</sup> Because our results converge in both the field and online settings, it heightens our confidence in these findings.

However, there are also several limitations of this work. First, we only tested this intervention in the United Kingdom; however, we believe these findings should generalize because of the mechanism we identified. The "years" résumé seems to operate on a cognitive level, not a cultural level. Therefore, we would expect this intervention to be effective in countries with less generous parental leave policies (e.g., the United States) or more generous policies (e.g., Scandinavian countries). That said, we encourage researchers to experimentally test the effectiveness of the intervention in other countries. Furthermore, as we only tested four specific levels of job experience (i.e., five, nine, ten, and fifteen years), it is possible that there may be a lower bound of experience (e.g., one year or less) below which the "years" résumé might actually make a résumé appear less impressive than the standard "dates" résumé. We also believe that the positive effects of this intervention may be limited to fields where more years is a proxy for more experience, and thus viewed favorably. If, however, a job applicant had a career break in certain fields (e.g., while finishing a PhD in an academic context), the "years" résumé might call attention to the extended timeframe, potentially triggering a negative effect (e.g.,

signaling low motivation).<sup>13</sup> Another potential limitation is in Studies 2 and 3 where we preregistered our analysis to exclude participants who did not pay sufficient attention and failed the attention check in the study. Doing so reduces the extent to which our results allow for a causal interpretation for all participants; rather they represent the causal treatment effect for participants who paid attention (i.e., treatment-on-treated). However, our results are largely robust—with two out of eight regression specifications becoming marginally significant and the other six specifications remaining significant—to including even participants who did not pay sufficient attention in the study. Finally, a potential limitation of our design in Study 1 is that both the CV and the cover letter changed, introducing a potential confound. While this means that we cannot precisely identify which element in Study 1 caused our main effect, there is additional evidence that is consistent with our conclusion about the "years" résumé: we replicated the main effect in online studies, where we only manipulated the résumés and did not provide a cover letter.

Our audit study was primarily conducted before the onset of COVID-19, yet it might offer insights into how employees can navigate a pandemic-induced employment gap. Due to the COVID-19 pandemic, millions of women and men now have employment gaps on their résumés.<sup>66</sup> While hiring penalties may be lower for applicants whose employment gaps are due to external forces,<sup>10</sup> the intervention tested here could theoretically help all applicants to receive appropriate recognition for their years of job experience.

While our results primarily speak to applicants, we believe this research also contributes to understanding ways stereotyping can be overcome and helping organizations with the design of their hiring processes. Hiring managers can add this intervention to their toolbox of "debiasing" strategies (i.e., by explicitly requesting that all résumés be submitted with years instead of dates), just as "blinding" résumés has become commonplace in many settings.<sup>24</sup> While the general equilibrium effect of this intervention is an important question for future research if this intervention becomes more widely adopted, we predict that it would generally contribute to leveling the playing field if adopted more widely across applicants with and without employment gaps. In this way, applicants with equal experience receive equal employment opportunities, without the biasing stereotypes that more salient gaps may evoke.

#### Methods

Materials, data, and code for all studies are available at

https://osf.io/3gahc/?view\_only=a8188dc8f9e8473e8722fd57b92484ba. Ethics oversight for the field experiment was provided by the Behavioural Insights Team's internal ethics process, and ethics oversight for the online lab experiments was provided by the University of Exeter ethics committee (eUEBS003871) and the Harvard University IRB (IRB20-1467). It is worth noting that the initial field study (Study 1) did not obtain explicit informed consent due to the impossibility of mitigating deception in this design; there was also no debriefing, which the research team deemed would create more harm than benefit. Moreover, the email inboxes and phones were monitored daily, and the research team politely declined any positive callbacks within one working day to reduce the potential burden on employers. Participants in the online studies did provide informed consent.

**Study 1. Participants and procedure.** We aimed to send 9,000 applications to detect an effect size of d = 0.08 with 80% power. We manipulated the presentation of the applicant's prior experience in a job in the form of dates (as is the case on traditional résumés) or summarizing the number of years the applicant held the job (on the redesigned résumé). We sent one of four different résumés and cover letters (conditions described below) to 9,022 employers across eight different sectors representing high and low-skill jobs, in both male- and female-dominated fields (i.e., software engineering, human resources, call center operations, warehouse operations, finance, manufacturing production management, administrative work, and social care work) who were advertising vacancies on a job-search platform from October 2019 to March 2020 in the U.K. We aimed to assess a broad range of jobs that vary in the representation of men and women as well as the extent to which the job requirements might be linked to the male or female gender.<sup>58</sup>

All résumés belonged to a fictitious applicant who had nine years of work experience, was employed in two previous roles, and most importantly, was a mother. We selected nine years because the average age of the women in the U.K. for their first child is 28.8<sup>68</sup> and 50% of the population start full-time employment by 19-years-old,<sup>69</sup> which implies approximately 9-10 years of work experience before the birth of a first child. The fictitious applicant was named "Sarah Smith." Sarah was selected because it is one of the most common first names for women born in the U.K. between 1984 and 1994<sup>70</sup> without strong associations with a particular social

class and "Smith" is the most common last name in the U.K.<sup>71</sup> Where there was a gap, we selected a 2.5 year gap, because it is the average amount of time out of the workforce taken by women who choose to leave paid employment (beyond maternity or shared parental leave) for childcare-related reasons in the U.K. and then seek to return to paid employment.<sup>72</sup> We tailored the highest level of education and specifics of work experience to slightly exceed the typical requirements of each role. We conveyed parental status in all conditions with parent-teacher association involvement on résumés and stating that applicants were relocating to the hiring city with their family in cover letters.<sup>5,10</sup>

We randomly assigned employers to receive one of four résumés (and corresponding cover letters). Three conditions used the "traditional" résumé format, listing previously held jobs with their corresponding dates of employment. We varied whether an employment gap was present and, if so, whether this gap was explained (by stating that the applicant took time out of the workforce to look after her children) or unexplained. In the No Gap condition, the résumé had the most recent employment date running from "July 2015 to Present," along with a line in the cover letter that said, "I am currently employed at [Organization]." In the Unexplained Gap condition, the last date in employment ended two and a half years before the résumé was sent out and there was no explanation in the cover letter. In the Explained Gap condition, the last date in employment ended two and a half years before the résumé was sent out, followed by the sentence, "Left to become a full-time mother and look after my children." The Explained Gap condition also included the following sentence in the cover letter, "I was most recently employed at [Organization] and left in [Date] to become a full-time mother and care for my children, and am now eager to return to work." We included the Explained Gap condition because it is a frequently recommended "solution" on job seekers websites and thus offers a useful comparison against a common real-world benchmark.

The fourth condition— the "Years" condition—is our main treatment of interest, in which we replaced the dates of employment with the number of years in each role with no explicit mention of current employment in the cover letter. In this condition, employment gaps were, by design, not visible to the employer since this format conveys applicant job experience without revealing when the jobs were held.

We were interested in studying whether an application received a "callback" from an employer. To capture callbacks, we assigned each condition a unique corresponding email

address and phone number and monitored both. Following the literature,  $^{5,10,29}$  we defined a callback as the employer progressing the applicant to the next stage in the process (e.g., invitation to an online test, an interview, or an in-person assessment), demonstrating strong positive interest, inquiring about start date availability, requesting that the applicant get in touch again once she moved, or if there was more than one missed call from the same employer. Our pre-registration can be accessed at <a href="https://aspredicted.org/blind.php?x=i6k3se">https://aspredicted.org/blind.php?x=i6k3se</a>.

The vast majority of applications for Study 1 (92.9%) were submitted before March when the U.K. enacted social distancing measures related to COVID-19. However, our results are also robust if we exclude data from March 2020 from the analysis.

**Online Pilot.** For this exploratory study, we recruited 250 employees with hiring experience (33.6% male,  $M_{age} = 35.62$ ,  $SD_{age} = 12.38$ ; see Supplementary Information for details) from the U.K. through Prolific Academic and collected data using a Qualtrics survey. After being randomized to either the Traditional or Years résumé of a female applicant, participants rated whether they found the resumé easy to read, novel, and how much professional experience they thought the applicant had; participants also recalled the applicant's years of job experience and demographics (e.g., gender).

**Study 2.** We aimed to recruit 800 full-time employees from the U.K. through Prolific Academic and collected data using a Qualtrics survey to be able to detect an effect size of d = 0.20 with 80% power. After excluding participants who failed manipulation checks, we were left with 761 participants (54.7% male,  $M_{age} = 36.15$ ,  $SD_{age} = 10.68$ ). We said we would exclude participants who failed the manipulation checks in our pre-registration, so our main analysis here excludes them; however, we provide the full intention-to-treat analysis in the SI; these results are consistent with our main findings.

Participants saw one of two different job types (i.e., software engineer, which is a traditionally male job, or human resources manager, which is a traditionally female job). Participants were then randomly assigned to view a male or a female applicant and a control (traditional dates without a gap) or treatment (Years) résumé. After seeing the résumé, participants were asked, "how likely are you to advance this candidate to the next stage in the process?" on a scale from 1 (Definitely not) to 100 (Definitely yes).

After seeing the résumé and rating the applicant, participants proceeded to the next page of the survey where they no longer saw the résumé and were asked to recall the number of years of experience the applicant had and the number of previous jobs the applicant held, as well as identify the gender of the applicant (a manipulation check). Our pre-registration can be accessed at <u>https://aspredicted.org/blind.php?x=4zq8a7</u>.

**Study 3.** We recruited participants residing in the U.K. through Prolific Academic and collected data using a Qualtrics survey. We aimed to recruit 1,600 participants to be able to detect an effect size of d = 0.25 with 80% power. We excluded participants who failed an attention check before randomization and those who failed the gender manipulation check. We were left with a sample of 1,521 participants (38.7% men,  $M_{age} = 34.8$ ,  $SD_{age} = 9.7$ ). Because in our pre-registration, we said that we would exclude these participants, our main analysis here excludes them; however, we provide the full intention-to-treat analysis in the SI; these results are consistent with our main findings.

Participants were randomly assigned to view the Traditional (dates without a gap) or Years résumé. Within each condition, participants were then randomly assigned to see a résumé with fewer years (5 years) or more years (15 years) of job experience. Participants were then asked to rate on a 1-100 scale how likely they would be to advance the applicant to the next stage in the application process. After seeing the résumé and rating the applicant, participants proceeded to the next page of the survey where they no longer saw the résumé and were asked to recall the applicant's number of years of job experience and their demographics (as in Study 2). Our pre-registration can be accessed at <u>https://aspredicted.org/MY9\_14Z</u>.

**Data availability statement:** Data for all studies are available at https://osf.io/3gahc/?view\_only=a8188dc8f9e8473e8722fd57b92484ba.

**Code availability statement:** Code for all studies is available at <a href="https://osf.io/3gahc/?view\_only=a8188dc8f9e8473e8722fd57b92484ba">https://osf.io/3gahc/?view\_only=a8188dc8f9e8473e8722fd57b92484ba</a>.

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**Author contributions:** L.N. designed the intervention and field experiment; A.S.K. and Author 4 input into the field experiment and designed the online experiments; A.S.K. performed the online experiment research and J.G.L. performed and led the field experiment; A.S.K. analyzed the data; and all authors wrote the paper.

**Competing interests:** L.N. is employed by the Behavioural Insights Team. The rest of the authors declare no competing interests.

### References

- Terrelonge Z Most common reasons for a career break and staff expectations when returning to work. (2017). Accessed on 17 September 2021 at <u>https://realbusiness.co.uk/most-common-reason-for-a-career-break-and-staffexpectations-afterwards</u>
- 2. Montenovo L, Jiang X, Rojas FL, Schmutte IM, Simon KI, Weinberg BA, Wing C Determinants of disparities in covid-19 job losses. *Natl Bureau Econ Res.* w27132.(2020)
- 3. Fuller S, Qian, . Covid-19 and The Gender Gap in Employment Among Parents of Young Children in Canada. *Gender Soc.* **35**(2):206-217 (2021).
- Thévenon O, Solaz A. Labour market effects of parental leave policies in OECD Countries. (2013). Accessed on 28 September 2021 at <u>OECD iLibrary | Labour Market</u> <u>Effects of Parental Leave Policies in OECD Countries (oecd-ilibrary.org)</u>
- 5. Correll SJ., Benard S, Paik I Getting a job: Is there a motherhood penalty?." *American Journal of Sociology* **112(5)**:1297-133 (2007).
- Eriksson S, Rooth DO Do employers use unemployment as a sorting criterion when hiring? Evidence from a field experiment. *American Economic Review* 104(3):1014-39 (2014).
- Kroft K, Lange F, Notowidigdo MJ. Duration dependence and labor market conditions: Evidence from a field experiment. *Quarterly Journal of Economics* 128(3): 1123-1167 (2013).
- 8. Namingit S, Blankenau W, Schwab B. Sick and tell: A field experiment analyzing the effects of an illness-related employment gap on the callback rate. *J Econ Behav Org.* 185:865-882 (2021).
- 9. Oberholzer-Gee F. Nonemployment stigma as rational herding: A field experiment. *J of Econ Behav Org.* **65(1)**:30-40 (2008).
- 10. Weisshaar, K. From opt out to blocked out: The challenges for labor market re-entry after family-related employment lapses. *American Sociological Review* **83(1)**:34-60 (2018).
- 11. Borjas, G. J. (2020). Labor Economics (8th ed.). Irwin: McGraw-Hill.
- 12. Bertrand, M., Goldin, C., & Katz, L. F. Dynamics of the gender gap for young professionals in the financial and corporate sectors. *American Economic Journal: Applied Economics*, **2(3)**, 228-55 (2010).
- Van Belle, Eva, Valentina Di Stasio, Ralf Caers, Marijke De Couck, and Stijn Baert. "Why are employers put off by long spells of unemployment?." European Sociological Review 34(6):694-710 (2018).
- 14. Budig MJ, England P. The wage penalty for motherhood. *American Sociological Review* 204-225 (2001).
- 15. Gough M, Noonan M. A review of the motherhood wage penalty in the United States. *Sociol Compass.* **7(4)**:328-342 (2013).
- 16. Sigle-Rushton W, Waldfogel J. Motherhood and women's earnings in Anglo-American, Continental European, and Nordic countries. *Fem Econ.* **13(2)**:55-91 (2007).
- 17. Brown LM. The relationship between motherhood and professional advancement. *Employee Relations* **32(5)**:470-494 (2010).
- 18. Hoyt CL. Women, men, and leadership: Exploring the gender gap at the top. *Soc Pers Psychol Compass.* **4(7)**:484-498 (2010).

- 19. Schein VE. The work/family interface: Challenging "corporate convenient." *Women in Manage Rev.* 8(4):22-27 (1993).
- 20. Williams JC. Beyond the glass ceiling: The maternal wall as a barrier to gender equality. *T. Jefferson L. Rev.*, **26**:1-14 (2003).
- Blau FD, Brummund P, Liu AYH. Trends in occupational segregation by gender 1970–2009: Adjusting for the impact of changes in the occupational coding system. *Demography.* 50(2): 471-492. (2013)
- 22. Samek A. Gender differences in job entry decisions: A university-wide field experiment. *Manage Sci*, **65(7)**:3272-3281 (2019)
- 23. Fernandez-Mateo I, & King Z Anticipatory sorting and gender segregation in temporary employment. *Manage Sci.* **57(6)**:989-1008 (2011).
- 24. Bohnet, I. What Works: Gender Equality by Design. (Harvard University Press, 2016).
- 25. Exley CL, Niederle M, Vesterlund L. Knowing when to ask: The cost of leaning in. J *PolitEcon.* **128(3):**816-854 (2020).
- Brands RA, Fernandez-Mateo I. Leaning out: How negative recruitment experiences shape women's decisions to compete for executive roles. *Admin Sci Quart.* 62(3):405-442 (2017).
- Baert, S. Hiring discrimination: An overview of (almost) all correspondence experiments since 2005. *Audit studies: Behind the scenes with theory, method, and nuance*, pp.63-77 (2018).
- 28. Booth A, Leigh, A. Do employers discriminate by gender? A field experiment in female-dominated occupations. *Economic Letters*. **107(2)**:236-238 (2010).
- 29. He J, Kang S. Covering in cover letters: Gender and self-presentation in job applications. *Academy of Management Journal.* **64(4)**:1097-1126 (2021).
- Bertrand, M., & Mullainathan, S. Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *American economic review*, 94(4), 991-1013 (2004).
- 31. Ghayad R. The jobless trap. (Northeastern University Press, 2013)
- 32. Pedulla DS. Penalized or protected? Gender and the consequences of nonstandard and mismatched employment histories. *American Sociological Review* **81(2):** 262-289 (2016).
- Firth M. Sex discrimination in job opportunities for women. Sex Roles, 8(8), pp.891-901 (1982).
- 34. Dobbin F, Kalev A. The promise and peril of sexual harassment programs. *Proceedings* of National Academy of Sciences. **116(25)**:12255-12260 (2019).
- 35. Galinsky AD, Moskowitz, G. Perspective-taking: decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology* **78(4)**:708-724 (2000).
- 36. Axt, J. R., & Lai, C. K. Reducing discrimination: A bias versus noise perspective. *Journal of Personality and Social Psychology*, **117(1)**, 26 (2019).
- 37. Bohnet I, Van Geen A, Bazerman M. When performance trumps gender bias: Joint vs. separate evaluation. *Management Science*. **62(5)**:1225-1234 (2016).
- 38. Landivar LC, Ruppanner L, Scarborough WJ, Collins C. Early signs indicate that COVID-19 is exacerbating gender inequality in the labor force. *Socius.* **6**:1-3 (2020).
- 39. Nicks L, Burd H, Barnes J. Returners qualitative analysis: Organisations' experiences with returners (2019). Accessed on 1 Nov 2020 at

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_ data/file/790394/Returners-qualitative-analysis3.pdf

- 40. Baert, S. and Vujić, S.. Does it pay to care? Volunteering and employment opportunities. *Journal of Population Economics*, **31(3)**819-836 (2018).
- 41. Morgan WB, Walker SS, Hebl MM, King EB. A field experiment: Reducing interpersonal discrimination toward pregnant job applicants. *Journal of Applied Psychology* **98(5)**:799-809 (2013).
- 42. Hogg, M.A. Social categorization, depersonalization, and group behavior (2004)
- Hogg, M. A., & Turner, J. C. Interpersonal attraction, social identification and psychological group formation. *European journal of social psychology*, **15(1)**, 51-66 (1985).
- 44. Kahneman D, Tversky A. Subjective probability: A judgment of representativeness. *Cognitive Psychology*. **3(3):** 430-454 (1972).
- Kobrynowicz D, Biernat M. Decoding subjective evaluations: How stereotypes provide shifting standards. *Journal of Experimental Social Psychology* 33(6):579-601 (1997).
- 46. Milkman, K. L., Akinola, M., & Chugh, D. Temporal distance and discrimination: An audit study in academia. Psychological science, **23(7)**, 710-717 (2012).
- 47. Tversky A, Kahneman D Judgment under uncertainty: Heuristics and biases. *Science*, **85(4157)**:1124-1131 (1974).
- 48. Uhlmann, E. L., & Cohen, G. L. Constructed criteria: Redefining merit to justify discrimination. *Psychological Science*, **16(6)**, 474-480 (2005).
- 49. Williams, J. C. The Pandemic Has Exposed the Fallacy of the "Ideal Worker.". *Harvard Business Review*. (2020).
- 50. Karren R, Sherman K. Layoffs and unemployment discrimination: A new stigma. *Journal of Management Psychology* **27(8)**:848-863 (2012).
- Weisshaar, K. Employment Lapses and Subsequent Hiring Disadvantages: An Experimental Approach Examining Types of Discrimination and Mechanisms. *Socius*, 7, (2021).
- 52. Cunningham J, Macan T. Effects of applicant pregnancy on hiring decisions and interview ratings. *Sex Roles.* **57(7)**:497-508 (2007).
- 53. Dana, J., Dawes, R., & Peterson, N. Belief in the unstructured interview: The persistence of an illusion. *Judgment and Decision Making*, **8**(5), 512 (2013).
- 54. Kausel EE, Culbertson SS, Madrid HP. Overconfidence in personnel selection: When and why unstructured interview information can hurt hiring decisions. *Organ Behav Hum Dec.* **137:**27-44 (2016).
- 55. Bragger JD, Kutcher E, Morgan J, Firth P. The effects of the structured interview on reducing biases against pregnant job applicants. *Sex Roles*. **46(7)**:215-226 (2002).
- 56. Brecher E, Bragger J, Kutcher E. The structured interview: Reducing biases toward job applicants with physical disabilities. *Emp Resp Rights J.* **18(3)**: 155-170 (2006).
- 57. Black DE, Vance MD. Do first impressions last? The impact of initial assessments and subsequent performance on promotion decisions. Manage Sci, **67(7)**:3985-4642 (2020).
- 58. Van Borm, Hannah, and Stijn Baert. Diving in the minds of recruiters: What triggers gender stereotypes in hiring?. No. 22/1043. Ghent University, Faculty of Economics and Business Administration, (2022).
- 59. Madera JM, Hebl MR, Martin RC. Gender and letters of recommendation for

academia: agentic and communal differences. *Journal of Applied Psychology* **94(6)**:1591 (2009).

- 60. Hainmueller, J., Hangartner, D. and Yamamoto, T. (2015). Validating vignette and conjoint survey experiments against real-world behavior. *Proceedings of the National Academy of Sciences*, **112(8)**,2395-2400 (2015).
- 61. Rubin, D. B. Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology*, **66(5)**, 688 (1974).
- 62. Angrist, J. D., & Pischke, J. S. *Mostly Harmless Econometrics* (Princeton University Press, 2008).
- Hauser OP, Linos E, Rogers T. Innovation with field experiments: Studying organizational behaviors in actual organizations. *Research in Organizational Behavior*. 37:185-98 (2017).
- 64. Palan, S., & Schitter, C. Prolific. ac—A subject pool for online experiments. Journal of Behavioral and Experimental Finance, **17**, 22-27 (2018).
- 65. Peer, E., David, R., Andrew, G., Zak, E., & Ekaterina, D. Data quality of platforms and panels for online behavioral research. *Behavior Research Methods*, 1-20 (2021).
- 66. Congressional Research Service. Unemployment Rates During the COVID-19 Pandemic: In Brief (Updated: November 6, 2020). Accessed on November 9, 2020 at https://fas.org/sgp/crs/misc/R46554.pdf.
- 67. Office of National Statistics. *Births by parents' characteristics in England and Wales:* 2016 (2017). Accessed on November 9, 2020 at <u>https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebi</u> <u>rths/bulletins/birthsbyparentscharacteristicsinenglandandwales/2016</u>
- 68. Office of National Statistics. *Milestones: journeying into adulthood* (2019). Accessed on November 9, 2020 at <u>https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populat</u> ionestimates/articles/milestonesjourneyingintoadulthood/2019-02-18
- 69. Office of National Statistics. Top 100 baby names in England and Wales: historical data.(2014). Accessed on November 9, 2020 at <a href="https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebi">https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebi</a> <a href="https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebi">https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebi</a>
- 70. Behindthename.com. "Sarah" (2020). Accessed on November 27, 2020 at https://www.behindthename.com/name/sarah/rating
- 71. Hanks P, Coates R, McClure P *The Oxford dictionary of family names in Britain and Ireland*. (Oxford University Press, 2016).
- 72. Paull G. Quantitative analysis of those returning to the labour market following a break to care for others. Government Equalities Office (2018). Accessed on 1 November 2020 at <a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/717833/Characteristics\_of\_Returners\_and\_Potential\_Returners.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/717833/Characteristics\_of\_Returners\_and\_Potential\_Returners.pdf</a>

### **Supplementary Information**

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### **Study 1 Additional Details**

## Supplementary Figure 1. Sample control and treatment résumés A. B.

Sarah Smith	Sarah Smith
Passionate HR professional with a proven track record leading teams to deliver significant	Contact details:
reasolution of the protection of the provent uses, record reducing teams to derive againstant transformation. Strong interpressional, communication and strategic skills. Thrives on new challenges and driven to continuously learn and develop. Adaptable to a range of sectors.	Passionate HR professional with a proven track record leading teams to deliver significant transformation. Strong interpersonal, communication and strategic skills. Thrives on new challenge, and driving to conjunctively low and and drawlow. Advantable to a renorm of acctore
Work Experience Senior IR Business Partner April 2016 to Present. Nottingham (Relocating within 2 weeks) Leading an HRBP team and collaborating with functional experts (Talent Acquisition, Reward) to implement HR strategy & operations for the Consumer Services Group Coaching and influencing executive management to largere workforce strategies Increasing business productivity through improved HR capability, e.g. successfully implemented a new recruitment process that reduced time-to-fill by 50% Reducing absence rates (7% to 4%) through a robust absence management policy Project managing major organisational change to support a high-performing culture HR Advisor March 2011 to March 2016.	Adaptable to a range of sectors.      Work Experience     Sonior HR Business Partner     A years      Notingham (Relocating within 2 weeks)      Lead an HRBP team and collaborate with functional experts (Talent Acquisition,     Reward) to implement HR strategy & operations for the Consumer Services Group     Coach and influence executive management to agree workforce strategies     Increase business productivity through in proved HR capability, e.g. successfully     implemented a new recruitment process that reduced time-to-fill by 50%.     Reduce absence rates (7% to 4%) through a robust absence management policy     Project manage major organisational change to support a high-performing culture     HR Advisor
Responsible for HR operations across a range of functions, including performance management, employee engagement, leadership development and culture Designed and implemented a new management and leadership training programme – this reduced staff turnover among both managers and their reports Complex case management in redundancy, grievance and disciplinary Skills	Notingham     Responsible for HR operations across a range of functions, including performance     management, employee engagement, leadership development and culture     Designed and implemented a new management and leadership training programme     - this reduced staff turnover among both managers and their reports     Complex case management in redundancy, grievance and disciplinary
Organisational and cultural change, including restructuring and redundancy Operational HR delivery, business and performance improvement Coaching leaders to support a high performing and inclusive culture Experience using Microsoft Office, Workday, SAP, Oracle Education, and Qualifications	Skills Organisational and cultural change, including restructuring and redundancy Operational HR delivery, business and performance improvement Coaching leaders to support a high performing and inclusive culture Experience using Microsoft Office, Workday, SAP, Oracle
CIPD Chartered Member (MCIPD)     CIPD Level 7 Advanced Diploma in HR Management at     BA (Hons) in Business Management and Human Resources (2:1) at     University     Three A Levels A-B including English and Maths at     School     8 GCSEs A-C including Maths and English Language at	Education and Qualifications CIPD Chartered Member (MCIPD) CIPD Level 7 Advanced Diploma in HR Management at BA (Hons) in Business Management and Human Resources (2:1) at University Three A Levels A-B including English and Maths at 8 GCSEs A-C including Maths and English Language at School
Primary School September 2018 to Present Volunteer for the PTA at my daughter's primary school including organising fundraising events	Voluntary Parent-Teacher Association at Primary School Volunteer for the PTA at my daughter's primary school including organising fundraising events

### **Results and Discussion**

As specified in the preregistration (<u>https://aspredicted.org/blind.php?x=i6k3se</u>), we used a linear probability model to estimate the impact of the randomly assigned condition on callbacks and, as pre-registered, controlling for working pattern (full-time/ part-time) as well as for location (region-level fixed effects). The dependent variable callbacks is 1 if the response was positive (as defined above) and 0 otherwise. The independent variable takes one of four values: In the text, the baseline is our treatment of interest, the Years condition, against which the other three conditions are compared (No Gap, Unexplained Gap, Explained Gap). Here, we produce both regression tables using a linear probability model (Supplementary Table 2A) and a logistic regression for robustness (Supplementary Table 2B). We produce Supplementary Table 2C showing the same linear probability model using the Unexplained Gap condition as the baseline and showing how only the treatment significantly improves upon it. It is interesting to note that, unlike past research, we do not see a penalty for an employment gap in this context, relative to the Unexplained Gap condition.

While our randomization of the four conditions resulted in balance of our variables by construction (see Supplementary Table 1 for descriptive statistics), we nonetheless conducted a number of robustness analyses that ensured that no covariates were responsible for the treatment effect we observed.

	Years	No Gap	Explained Gap	Unexplained Gap	
Administrative assistant	282	282	282	282	
Call centre operative	282	282	282	282	
Finance manager	282	282	282	282	
Human resources manager	282	282	282	282	
Product manager	282 282		282	282	
Software engineer	281	282	282	282	
Support worker	282	282	282	282	
Warehouse operative	282	282	282	282	
Full-time positions	1,253	1,259	1,296	1,253	
Part-time positions	576	591	569	569	
Working pattern not stated/other	426	405	391	434	
Average salary advertised (SD)	£27,108 (£14,973)	£26,706 (£14,675)	£27,513 (£15,077)	£27,534 (£15,550)	

**Supplementary Table 1. Balance across conditions** 

Supplementary rable 2	A. Impact of thea	unione on canba	icks (inical pro	Dabinty mouch
	(1) Callback	(2) Callback	(3) Callback	(4) Callback
No Gap	-0.029*	-0.029*	-0.029*	-0.029*
	(0.014)	(0.013)	(0.014)	(0.013)
	p = 0.036	p = 0.028	p = 0.038	p = 0.030
Explained Gap	-0.049***	-0.050***	-0.050***	-0.051***
	(0.014)	(0.013)	(0.014)	(0.013)
	p < 0.001	p < 0.001	p < 0.001	p < 0.001
Unexplained Gap	-0.050***	-0.049***	-0.049***	-0.049***
1 1	(0.014)	(0.013)	(0.014)	(0.013)
	p < 0.001	p < 0.001	p < 0.001	p < 0.001
Mean (Years)	0.38	0.38	0.38	0.38
Working pattern controls	Y	Y	Y	Y
Job controls	Ν	Y	Ν	Y
Region	Ν	Ν	Y	Y
Observations	9,022	9,022	9,022	9,022
Adjusted R-squared	0.016	0.100	0.029	0.111

Supplying that a fast 20, impact of traingent on campacks (initial propagnity mous	Supplement	tary Table 2A. l	mpact of treatment	on callbacks	(linear pre	obability n	nodel
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### Supplementary Table 2B. Impact of treatment on callbacks (logistic regression)

	(1)	(2)	(3)	(4)
	Callback	Callback	Callback	Callback
No Gap	-0.129*	-0.141*	-0.128*	-0.141*
	(0.062)	(0.065)	(0.063)	(0.066)
	p = 0.039	p = 0.031	p = 0.042	p = 0.032
Explained Gap	-0.216***	-0.242***	-0.225***	-0.254***
	(0.063)	(0.066)	(0.063)	(0.066)
	p < 0.001	p < 0.001	p < 0.001	p < 0.001
Unexplained Gap	-0.221***	-0.238***	-0.221***	-0.238***
	(0.063)	(0.066)	(0.063)	(0.066)
	p < 0.001	p < 0.001	p < 0.001	p < 0.001
Working pattern controls	Y	Y	Y	Y
Job controls	Ν	Y	Ν	Y
Region	Ν	Ν	Y	Y

Observations	9,022	9,022	9,022	9,022
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	(1) Callback	(2) Callback	(3) Callback	(4) Callback
No Gap	0.20 (0.014) p = 0.150	0.20 (0.013) p = 0.144	0.20 (0.014) p = 0.147	0.20 (0.013) p = 0.140
Explained Gap	0.001 (0.014) p = 0.942	-0.001 (0.013) p = 0.970	-0.001 (0014) p = 0.929	-0.003 (0.013) p = 0.835
Years	0.050*** (0.014) p <0.001	0.049*** (0.013) p <0.001	0.049*** (0.014) p <0.001	0.049*** (0.013) p <0.001
Mean (Unexplained Gap)	0.33	0.33	0.33	0.33
Working pattern controls	Y	Y	Y	Y
Job controls	Ν	Y	Ν	Y
Region	Ν	Ν	Y	Y
Observations	9,022	9,022	9,022	9,022
Adjusted R-squared	0.016	0.100	0.029	0.111

## Supplementary Table 2C. Conditions with Unexplained Gap condition as baseline (linear probability model)

Supplementary Table 2A-C Legend:  $\dagger p < .10$ ,  $\ast p < .05$ ,  $\ast \ast p < .01$ ,  $\ast \ast \ast p < .001$ . No corrections were made for multiple comparisons.

### **Pilot Additional Details**

#### Methods

*Participants and procedure.* We aimed to recruit 600 full-time employees from the United Kingdom (U.K.) through Prolific Academic to read. We planned to randomly assign participants to condition (control or treatment) for one of four different job types (i.e., software engineer, human resources manager, finance manager, and call centre operative), but due to a coding error, one of the job types (call centre operative) could not be analyzed. After excluding participants in both the control and treatment of the call centre operative, and excluding those who failed manipulation checks, we were left with 250 participants (33.6% male,  $M_{age} = 35.62$ ,  $SD_{age} = 12.38$ ).

After viewing one of three different job types, participants were randomly assigned to see a control (traditional dates without a gap) or a treatment (years) résumé. After seeing the résumé, participants were asked, "Overall, how much professional experience do you think this applicant has?" (1-7 Likert Scale ranging from "No experience" to "A lot of experience"). Participants were then asked two questions about the résumé: "To what extent do you think this CV is easy to read?" and "To what extent do you think this CV is novel" (1-7 Likert Scale ranging from "Definitely not" to "Definitely yes"). Then participants were asked to recall the number of years of professional experience the applicant had, to identify the gender of the applicant (a manipulation check), a series of exploratory questions (i.e., the gendered nature of the field of the job type and the new CRT scale; Thomson & Oppenheimer, 2016) and a comprehension check to ensure they understood the meaning of "novel" in this context (i.e., What is the definition of novel in the following context "The applicant's CV was novel" and they could choose between "new," "a book," "fiction," or "not sure"). Although we do not provide all exploratory analyses here, the full survey, dataset, and code can be found at

https://osf.io/3gahc/?view\_only=a8188dc8f9e8473e8722fd57b92484ba.

### Results

Adjusted R-squared

As seen in Supplementary Table 3, the years résumé was not perceived as more novel (Column 1; p = 0.952) nor as easier to read (Column 2; p = 0.611). In contrast, the treatment résumé significantly increased perceptions of overall applicant experience (Column 3, p = 0.002) and the recalled years of experience (Column 4, p = 0.047).

	(1) Résumé novelty	(2) Résumé easy to read	(3) Overall experience	(4) Years of experience
Treatment	0.010	0.078	0.369**	0.587*
	(0.162)	(0.153)	(0.1116)	(0.294)
	p = 0.952	p = 0.611	p = 0.002	p = 0.047
Constant	3.459***	5.508***	5.795***	9.475***
	(0.116)	(0.109)	(0.083)	(0.210)
	p < 0.001	p < 0.001	p < 0.001	p < 0.001
Observations	250	250	250	250

Supplementary Table 3. Impact of résumé treatment on perceptions of résumés and applicants (OLS)

Supplementary Table 3 Legend: p < .10, p < .05, p < .01, p < .01, p < .01. No corrections were made for multiple comparisons.

-0.003

0.036

0.012

-0.004

### **Study 2 Additional Details**

Study 2 was designed to investigate whether the no dates version of a résumé has a

differential effect for male applicants compared with female applicants and, therefore, could be

extended to COVID-19 gaps. The pre-registration for Study 2 can be found at

https://aspredicted.org/blind.php?x=4zq8a7.

### Results

Replicating Study 2, we find evidence that the *Years* treatment increased perceptions of applicant experience. These effects held after controlling for gender or examining gender separately (see Supplementary Tables 4A-D for additional regression tables). Furthermore, we did not find a significant interaction between treatment and gender.

	(1) Probability of advancing	(2) Probability of advancing	(3) Probability of advancing	(4) Probability of advancing	(5) Probability of advancing (excluding top 1% outliers)
Treatment	2.13* (0.94) p=0.025	2.13* (0.94) p = 0.025	3.29* (1.33) p=0.014	3.29* (1.33) p=0.014	3.20* (1.34) p = 0.017
Male	-1.31 (0.94) p = 0.165	-1.31 (0.94) p = 0.163	-0.123 (1.35) p = 0.927	-0.13 (1.35) p = 0.923	-0.27 (1.35) p = 0.840
Treatment* Male	-	-	-2.34 (1.89) p = 0.216	-2.33 (1.89) p=0.217	-2.20 (1.90) p = 0.248
Job Control	Ν	Y	Ν	Y	Y
Observations	761	761	761	761	748
Adjusted R-squared	0.01	0.01	0.01	0.01	0.01

Supplementary Table 4A. Impact of résumé treatment on probability of applicant advancement and applicant gender (linear probability model)

	(1) Recalled years of experience	(2) Recalled years of experience	(3) Recalled years of experience	(4) Recalled years of experience	(5) Recalled years of experience (excluding top 1% outliers)
Treatment	1.06**	1.06**	1.57***	1.57***	0.90***
	(0.34)	(0.34)	(0.47)	(0.47)	(0.24)
	p = 0.002	p = 0.002	p < 0.001	p < 0.001	p < 0.001
Male	-0.42	-0.42	-0.10	0.10	-0.02
	(0.34)	(0.34)	(0.48)	(0.48)	(0.24)
	p = 0.211	p = 0.208	p = 0.832	p = 0.841	p = 0.945
Treatment*Male	-	-	-1.03	-1.02	-0.30
			(0.67)	(0.67)	(0.34)
			p = 0.127	p = 0.128	p = 0.374
Job Control	Ν	Y	Ν	Y	Y
Observations	761	761	761	761	748
Adjusted R-squared	0.01	0.01	0.01	0.02	0.04

Sı	ıpplement	ary Ta	<b>ble 4B.</b> ]	Impact of	résumé	treatment	on recall	ed years	of app	licant
ex	perience (	linear	probabi	lity model	)					

# Supplementary Table 4C. Impact of résumé treatment on probability of applicant advancement and applicant gender (ITT linear probability model)

	(1) Probability of advancing	(2) Probability of advancing	(3) Probability of advancing	(4) Probability of advancing
Treatment	$1.81^{+}$ (0.94) p = 0.055	1.81† (0.95) p = 0.056	3.09* (1.33) p = 0.021	3.08* (1.33) p=0.021
Male	-1.15 (0.94) p = 0.224	-1.16 (0.95) p = 0.222	-0.150 (1.34) p = 0.912	-0.143 (1.35) p = 0.916
Treatment* Male	-	-	-2.56 (1.89) p = 0.175	-2.56 (1.89) p = 0.176
Job Control	Ν	Y	Ν	Y
Observations	787	787	787	787
Adjusted R-squared	0.001	0.001	0.001	0.001

	(1) Recalled years of experience	(2) Recalled years of experience	(3) Recalled years of experience	(4) Recalled years of experience
Treatment	1.05** (0.33) p = 0.001	1.05** (0.34) p = 0.002	1.49*** (0.46) p = 0.001	1.48*** (0.46) p = 0.001
Male	-0.43 (0.33) p = 0.193	-0.43 (0.33) p = 0.188	0.015 (0.47) p = 0.974	0.01 (0.47) p = 0.983
Treatment*Male	-	-	-0.88 (0.66) p = 0.184	-0.87 (0.67) p = 0.184
Job Control	Ν	Y	Ν	Y
Observations	787	787	787	787
Adjusted R-squared	0.01	0.01	0.01	0.02

Supplementary	Table 4D.	Impact of	f résumé	treatment o	n recalled	years of	f applica	Int
experience (ITT	linear pro	bability <b>1</b>	nodel)					

Supplementary Tables 4A-D Legend:  $\dagger p < .10$ ,  $\ast p < .05$ ,  $\ast \ast p < .01$ ,  $\ast \ast \ast p < .001$ . No corrections were made for multiple comparisons.



### Supplementary Figure 2A. Distribution data (likelihood of hiring) by condition



Supplementary Figure 2B. Distribution of all data (recalled years of experience) by condition

Supplementary Figure 2C. Distribution of data (recalled years of experience) by condition (up to 30 years)



#### **Study 3 Additional Details**

Study 3 was designed to investigate whether the no dates version of a résumé would be effective for fewer (5 years) or a greater (15 years) number of years of experience. The pre-registration for Study 3 can be found at <u>https://aspredicted.org/MY9\_14Z</u>.

### Methods

*Participants and procedure.* We recruited participants residing in the U.K. through Prolific Academic. We aimed to recruit 1,600 participants to be able to detect an effect size of d = 0.25 with 80% power. We excluded participants who failed an attention check before randomization and those who failed the gender manipulation check. We were left with a sample of 1,521 participants (38.7% men,  $M_{age} = 34.8$ ,  $SD_{age} = 9.7$ ).

Participants were randomly assigned to view a control (traditional dates without a gap) or treatment (years) résumé. Within each condition participants were then randomly assigned to see a résumé with fewer years (5 years) or more years (15 years) of experience.

After seeing the résumé, participants were asked, "how likely are you to advance this candidate to the next stage in the process?" on a scale from 1 (Definitely not) to 100 (Definitely yes). Then, the participants were asked to recall the number of years of experience the applicant had and to identify the gender of the applicant (a manipulation check). See Supplementary Tables 5A-B. Column (5) shows the robustness of the results by excluding participants whose responses were outliers in the top 1% for the variable of years recalled.

	(1) Probability of advancing (5 years)	(2) Probability of advancing (15 years)	(3) Probability of advancing	(4) Probability of advancing	(4) Probability of advancing (excluding top 1% outlier)
Treatment	2.36* (1.03) p = 0.023	2.21* (0.99) p = 0.026	2.29** (0.72) p = 0.001	2.36* (1.01) p = 0.020	2.55* (1.02) p = 0.012
Years	-	-	2.12** (0.72) p = 0.003	2.20* (1.01) p = 0.030	2.22* (1.01) p=0.029
Treatment*Years	-	-	-	-0.15 (1.43) p = 0.918	-0.22 (1.44) p = 0.876
Observations	762	755	1,517	1,517	1,500
Adjusted R-squared	0.01	0.01	0.01	0.01	0.01

## Supplementary Table 5A. Impact of résumé treatment and years of experience on probability of advancement (linear probability model)

## Supplementary Table 5B. Impact of résumé treatment and years of experience on probability of advancement (ITT linear probability model)

	(1) Probability of advancing (5 years)	(2) Probability of advancing (15 years)	(3) Probability of advancing	(4) Probability of advancing
Treatment	2.30* (1.02) p = 0.025	$1.92^{\dagger}$ (0.99) p = 0.052	2.11** (0.71) p = 0.003	2.30* (1.00) p = 0.022
Years	-	-	2.31** (0.71) p = 0.001	2.50* (1.01) p = 0.013
Treatment*Years	-	-	-	-0.15 (1.43) p = 0.790
Observations	808	799	1,607	1,607
Adjusted R-squared	0.01	0.01	0.01	0.01

Supplementary Tables 5A-B Legend:  $\dagger p < .10$ ,  $\ast p < .05$ ,  $\ast \ast p < .01$ ,  $\ast \ast \ast p < .001$ . No corrections were made for multiple comparisons.



Supplementary Figure 3A. Distribution data (likelihood of hiring) by condition

Supplementary Figure 3B. Distribution of all data (recalled years of experience) by condition





