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Missing or seizing the opportunity? The effect of an opportunity hire on job offers to science faculty candidates

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Abstract

Purpose – As universities grapple with broadening participation of women in science, many ADVANCE funded institutions hone in on transforming search committee practices to better consider dual-career partners and affirmative action hires ("opportunity hires"). To date, there is a lack of empirical research on the consequences and processes underlying such a focus. The purpose of this paper is to examine whether and how two ADVANCE-recommended hiring practices, dual-career hiring and affirmative action hiring, help or hinder women's participation in academic science.

Design/methodology/approach – In two experiments, the authors tested what happens to a science candidate's evaluation and offer when that candidate reveals he or she has a dual-career partner (vs is a solo-candidate, Experiment 1) or if it is revealed that the candidate under review is the dual-hire partner or is a target of opportunity hire (vs primary candidate, Experiment 2). A random US national sample of academic scientists provided anonymous external recommendations to an ostensible faculty search committee.

Findings – Evaluators supported the job offer to a primary candidate requiring a heterosexual partner accommodation. This good news, however, was offset by the results of Experiment 2, which showed that support for the partner or affirmative action candidate depended on the evaluator's gender. Taken together, the research identifies important personal and contextual features that sometimes do – and sometimes do not – impact hiring perceptions of women in science.

Originality/value – The authors believe the effects of such an emphasis on opportunity hires within ADVANCE funded institutions may be considerable and inform changes to policies and practices that help bring about gender equality.

Keywords Affirmative action, Gender equality, Dual-career accommodation, Women in science

Paper type Research paper

Social justice is just one of many very good reasons to care about diversifying the academic workforce (Byars-Winston, 2014; Cech, 2014; Chesler *et al.*, 2005). Diversity in academic science lends itself to more creative and innovative discoveries (Hong and Page, 2004; Page, 2008; Valantine and Collins, 2015), provides role modeling of multiple ways of knowing that appeals to underrepresented students and breaks down stereotypes (Young *et al.*, 2013) and fosters a more inclusive work and social climate for everyone (Pande and Ford, 2011). Knowing these benefits of a diverse working and learning scientific community, universities must grapple with the reality that universities are highly gender and racially homogenous, with white men disproportionally represented as faculty in most science fields in higher education (National Science Foundation, 2017). Efforts to transform

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academic science into a more gender diverse and inclusive workplace must include scrutinizing university policies and programs aimed at rectifying the gender inequity, which have remained a focus of the National Science Foundation's ADVANCE Institutional Transformation grants (Mitchneck *et al.*, 2016). In this study, we examine two of the ADVANCE-recommended hiring practices, dual-career and affirmative action hires, aimed at broadening the participation of women in academic science.

Literature review

Universities are realizing that to recruit academic women in science, hiring practices must move from a "two-body problem" to a proactive "two-body opportunity" (American Association of University Professors, 2010; McCluskey *et al.*, 2016; Schiebinger *et al.*, 2008). The number of dual-career couples in academia is difficult to determine, as existing evidence is mostly anecdotal (Chronicle of Higher Education, 2011; Simmons, 2012). The best (albeit decade old) research by Schiebinger *et al.* (2008) revealed that over one third of faculty (36 percent) partner with or marry other faculty, and compared to men, women are especially likely to have academic partners (40 percent vs 34 percent, respectively). These data also show that dual-career couple rates are highest in academic science, with 54 percent of men and 83 percent of women scientists having a partner who is also in academic science. This means that to recruit women in academic science, university hiring committees must consider dual-career needs. The American Association of University Professors (2010) summarizes the issue as follows: "In the absence of such [dual-career] accommodations, academic couples may find themselves faced with long-distance relationships or the subordination of one career to the partner who succeeds in securing a position. Evidence, such as the high proportion of women in part-time and contingent positions, and the relative lack of women in tenure-track positions in research universities, suggests that the lack of such arrangements may be having an adverse impact on the careers of academic women" (p. 82).

Under US "Equal Employment Opportunity Commission" law, it is illegal to discriminate against someone seeking employment because of their marital or perceived marital status (Title VII of the Civil Rights Act, 1964). Nevertheless, fearing bias, candidates struggle with when to inform a search committee about a dual-career need (Simmons and Chivukula, 2015). Among women in academic science, does it hurt a candidate's job offer when she reveals she has an academic partner? And how does the partner fare when evaluated as a dual-career accommodation? Theories on internalized stigma consciousness (Pinel, 1999) coupled with evaluators' use of shifting standards (Biernat and Manis, 1994) suggest the possibility of a stigma for partner hire applicants who are assumed to be underqualified for a tenure-track position (e.g. Holmes, 2015). Although empirical work examining such experiences is limited, existing evidence points to both perceived and internalized stigma due to a partner hire status. For example, in Schiebinger *et al.* (2008), one faculty member offered this perspective on dual-career hires: "One partner is almost always perceived as better than the other. The other partner then suffers, in terms of what is offered, in reduced long-term support, and also psychologically as a second-class citizen." Therefore, it follows that self-identification in a dual-career academic couple (i.e. as the opportunity hire) may come at a cost.

Opportunity hires are not a "new" idea. Affirmative action programs are a long-standing recruitment tool for increasing women's participation in academic science. Federally contracted organizations in the US (including higher education institutions) are required to take "affirmative actions" to undo a history of marginalization and underutilizing a given population of people (U.S. Department of Labor, 1965). Misunderstandings about and resistance to affirmative action policies abound (Harrison *et al.*, 2006). Affirmative action hiring is not about quotas; affirmative action hiring is about recognizing that a highly

qualified diverse person is a value-added to the university (American Association of University Professors, 2014a). Opposition to such "target of opportunity" affirmative action hires likely stems from a zero-sum mentality (Norton and Sommers, 2011) that assumes less qualified women and minorities take the place of better qualified men (Chesler *et al.*, 2005). This line of thinking is a form of implicit bias that affirmative action programs are meant to combat (Bagenstos, 2007). Search committees might assume that they should ignore a candidate's race and gender and take a "colorblind" approach. Yet, decades of research suggest that people are very good at "guessing" a person's protected class, even when extraordinary measures are taken to conceal it (Jones and Urban, 2013). Seminal research from Heilman *et al.* (1992) illustrates that job applicant materials designated as an "affirmative action hire" reduced a woman's perceived competence relative to other female candidates for the same position; this effect was found in stereotypically masculine jobs (e.g. electrician) as well as more gender-neutral jobs (e.g. lab technician) (Heilman *et al.*, 1992). Thus, even when an affirmative action policy is exercised, how does the candidate fare when it comes time for the job offer? Are they seen as value-added with an "all-in" approach to make them the best offer possible? Or, perhaps, are such target of opportunity hires seen as less worthy with their accomplishments reduced to their status as a minority?

We draw from Shifting Standards Theory (e.g. Biernat and Manis, 1994; Biernat and Kobrynowicz, 1997) to test whether and how evaluations and job offer recommendations might differ for science faculty job candidates as a function of their status as an "opportunity candidate" who either requires a partner accommodation, is the partner candidate, or is an affirmative action candidate. Although the motivational reasons for devaluing a particular type of opportunity candidate (partner compared to affirmative action) may be different, the resulting shift in evaluation can be examined through a shifting standards perspective. Shifting Standards Theory posits that people shift the anchors of evaluations for zero-sum scales (e.g. salary, lab space, start-up funding) in favor of the higher status group (Biernat and Vescio, 2002). Numerous studies show that women, who are socially lower in status than men, receive fewer resources when they occupy higher status positions or are otherwise engaged in a gender role-incongruent domain or task (e.g. Biernat and Vescio, 2002). Non-zero-sum scales (e.g. Likert rating scale of competence) are tricky because it is difficult to know the reference group a perceiver is using. Sometimes a woman is judged competent relative to other women and sometimes she is judged competent relative to men, or relative to everyone; what is considered "competent" shifts depending on the reference group. On the other hand, zero-sum scales (e.g. rankings, salary, days off work) are often clearer because perceivers are using the entire population as a reference point (e.g. Biernat and Vescio, 2002).

Shifting Standards Theory is useful for understanding how the burden of proof for excellence might "shift" in a stereotypical way depending on the gender of the person who is being evaluated (Biernat and Manis, 1994). Case in point, Fuegen *et al.* (2004) asked US college students to make objective ratings about men and women law school graduates applying for an attorney position. Participants examined an identical resume, except the applicant was either described as male or female, and as either single without children or married with two young children. Participants were asked to set zero-sum standards for performance levels (e.g. standardized test scores needed to hire) and time commitment (e.g. how many days each month the applicant could leave early or call in sick). Results showed that the female applicant who was a parent was held to higher performance standards and stricter time commitment allowances than the same applicant who was a father. Indeed, parenthood did not negatively impact the evaluation of the male attorney applicant, and if anything, there was evidence for a fatherhood "leniency bias."

To test whether and how evaluations and resource allocation judgments might shift for opportunity candidates, we used a "resume study" methodology similar to Fuegen *et al.* (2004)

and other applicant-review hiring studies (e.g. Ameri *et al.*, 2015; Moss-Racusin *et al.*, 2012; Smith *et al.*, 2007; Steinpreis *et al.*, 1999). Drawing on a pool of evaluators who believed that they were offering input on an actual candidate under consideration for an assistant professor position in the USA, we sent out job materials with the exact same qualifications; the job vacancy description, cover letter, curriculum vitae and representative publication were identical and any differences in candidate evaluations would be due to modified instructions in the e-mail invitation and/or the perceived gender of the candidate. We used materials that depicted a well-qualified candidate (i.e. meeting minimum qualifications for the position, such as earning the terminal degree and showing potential for external funding). With that said, we intentionally created an ambiguous hiring situation (i.e. showing some weaknesses of the job candidate), which sets up a realistic situation for stereotypes to come into play (Fiske and Taylor, 1991).

Overview and hypotheses

The purpose of the present research was to examine whether and how two hiring practices, dual-career hiring and affirmative action hiring, help or hinder women's participation in academic science. We assessed both non-zero-sum evaluations of the candidate's perceived competence and hireability as well as zero-sum recommendations for compensation and resources. We conducted two studies to test this question with a nationwide sample of tenure-track faculty members across different science fields: chemistry and Kinesiology. In Experiment 1, we focused on how a solo-candidate (male or female) fares compared to the same candidate who makes it known that he/she has a partner and would require an academic dual-career accommodation. In Experiment 2, we focused on the experiences of candidates identified as the "opportunity candidate" (i.e. the partner of a primary candidate or an affirmative action candidate) compared to a primary-solo-candidate.

Importantly, we focused on the gatekeepers whose opinions have considerable bearing on the hiring process: hiring authorities and potential search committee members. We used two faculty samples with different stakes in the hiring process: Department Chairs – often the hiring authority for faculty lines – for whom "opportunity hire" considerations may be salient given top-down administration messages about diversity; and faculty members who serve on search committees, engage in formal and informal evaluations of candidates and importantly, may have varying levels of training and/or awareness of the contributions of "opportunity hires." Drawing from Shifting Standards Theory, we predicted that subjective evaluations would not differ based on the type of candidate, but that more limited zero-sum evaluations would favor the primary-solo hire. Specifically, we expected similar subjective qualification ratings of the "potential for success" across all candidates (*H1*) but predicted larger salaries, start-up packages, and research space for primary hires compared to dual-career or affirmative action opportunity hires (*H2*). We also explored the role of gender in these decision-making processes. Because of the complexity of recruiting a national sample of external evaluators for our candidates, we relied on partial designs isolating the role of gender differently across studies. Specifically, we examined candidate gender on opportunity hiring recommendations (Experiment 1) and the influence of evaluator gender on opportunity hiring recommendations (Experiment 2).

Experiment 1

Method

Participants. A random, nationally representative sample of 48 Chemistry Department Chairs (85.4 percent male, 91.7 percent full professor) from different PhD granting universities in the USA participated[1]. Most of our sample was male, which mirrors national trends in chemistry for chemistry professors specifically and academic

department leaders more generally (American Association of University Professors, 2014b). Department chairs were identified from websites of Chemistry PhD programs using a list of all programs in the nation obtained from the American Chemical Society ($N = 206$). As the "applicant" materials were modeled after a real person's candidate materials, our list of chemistry programs was screened to eliminate schools which were affiliated with the person's educational and career background (e.g. co-author institutions, graduate program attended). Based on these criteria, 185 invitations were sent (26 percent response rate).

Procedure. All department chairs were invited to participate as "external evaluators" via an e-mail request from the ADVANCE principal investigator (the second author) and Dean of the Letters and Science College at the university requesting the review. The request to review was framed as a pilot study "aimed at developing appropriate search protocols for academic job searches," in conjunction with the University's ADVANCE grant. Specifically, participants were told that multiple external reviewers would be asked to review a candidate for a position at the assistant professor level. Evaluators were then asked to provide an "anonymous (expedited) external review" of the candidate using a secure online screening matrix, and then provide feedback on the external review process. After obtaining informed consent, evaluators were directed to a secure website for the candidate, where they accessed a job advertisement (modified from a recent vacancy advertisement from the interdisciplinary Center for Biofilm Engineering at the university), candidate's CV and cover letter and one selected reprint/preprint. Participants were randomly assigned to one condition in a 2 (Candidate gender: female, male) × 2 (type of candidate: primary candidate with partner accommodation need, primary-solo-candidate) between-participants design.

Materials and manipulations. The e-mail invitation differed depending on random assignment to condition. The primary-solo-candidate condition read "Time is of the essence so we can move forward as quickly as possible." In the primary candidate with partner accommodation need, the e-mail invitation read: "Time is of the essence so we can move forward as quickly as possible as the candidate has informed the committee of the need for an academic partner accommodation." The e-mail invitation also indicated the gendered first name of the candidate under review (Gary or Lisa).

The real person who granted us permission to modify her actual application materials was already in a tenure-track position at the university. As such, the candidate's qualifications on the CV were modified to be more ambiguous in merit (i.e. meeting but not exceeding expectations for a junior-level hire) and her first name was changed for confidentiality. For example, although the candidate was described as having significant post-doctoral experience, the publication record was (intentionally) reduced and the candidate lacked external funding. The sample publication and CV were identical across conditions, except for the first name of the candidate, which was manipulated on all the materials as male (Gary) or female (Lisa). These first names were selected for their relative equivalence on competence, attractiveness, and age (Kasof, 1993).

The cover letter was manipulated to include information about the candidate's gender (signed as either Gary or Lisa) and contained information about the need for an academic partner accommodation (or not). Specifically, in the partner accommodation need condition the letter read "When considering where to apply, my partner and I know we need to be in a place where we can both thrive as academics and our hope is that Montana State University is the type of university that will see the positive impact we can both make with our independent lines of interdisciplinary research." By contrast, the primary-solo-candidate condition read "When considering where to apply, I know I need to be in a place where I can thrive as an academic and my hope is that Montana State

University is the type of university that will see the positive impact I can make with my independent line of interdisciplinary research."

Measures. External evaluators were asked to complete a screening matrix for the candidate, containing non-zero-sum ratings of potential for success (7 items, 1–5 scale). Example items included "potential for scholarly impact, potential to teach and supervise undergraduates, and potential for research productivity" (Cronbach's $\alpha = 0.88$). The screening matrix was based on the widely-used candidate tool developed through the ADVANCE funded STRIDE program at the University of Michigan (2016).

Recommendations for zero-sum resources were collected after providing institution and discipline-specific ranges for salary (range = \$63,000–\$85,000), start-up package (range = \$250,000–\$1,000,000), and research space (range = 750–1,500 square feet). We also requested participants' demographics (e.g. gender, academic rank) and experiences with the search process, in addition to whether they themselves were part of a dual-career hire.

Results

A 2 (candidate gender: female, male) × 2 (type of candidate: primary candidate with partner accommodation need, primary-solo-candidate) analysis of variance (ANOVA) was conducted on perceived potential for success. Partial η^2 was calculated to estimate the size of the effects, using 0.01 as a small effect size, 0.06 as a medium effect size and 0.14 as a large effect size (Cohen, 1988; Richardson, 2011). No main effects of candidate gender, $F(1, 44) = 0.44$, $p = 0.51$, $\eta_p^2 = 0.01$, or type of candidate, $F(1, 44) = 0.37$, $p = 0.55$, $\eta_p^2 = 0.01$, nor the candidate gender × type of candidate interaction, $F(1, 44) = 0.19$, $p = 0.67$, $\eta_p^2 = 0.00$, emerged. In support of *H1*, being perceived as having a partner did not affect non-zero-sum perceptions of candidate's potential for success in chemistry, regardless of candidate gender (see Table I).

We next tested zero-sum recommendations using parallel 2 (candidate gender: female, male) × 2 (type of candidate: primary candidate with partner accommodation need, primary-solo-candidate) ANOVAs on salary, start-up package and research space. No main effects of candidate gender, $F(1, 38) = 0.25$, $p = 0.62$, $\eta_p^2 = 0.01$ or type of candidate, $F(1, 38) = 0.36$, $p = 0.55$, $\eta_p^2 = 0.01$, nor the candidate gender × type of candidate interaction, $F(1, 38) = 0.01$, $p = 0.94$, $\eta_p^2 = 0.00$, emerged on suggested salary. Similarly, no

Candidate Gender	Primary-solo-candidate *M* (SE)	Primary candidate with partner accommodation need *M* (SE)
Potential for success		
Male	2.18 (0.17)	2.21 (0.21)
Female	2.23 (0.19)	2.43 (0.20)
Salary		
Male	74,464 (1,371)	73,625 (1,813)
Female	75,400 (1,622)	74,300 (1,622)
Start-up package		
Male	530,769 (47,983)	514,286 (65,390)
Female	613,889 (57,669)	616,667 (57,669)
Research space		
Male	1,112.5 (69.0)	1,064.3 (90.4)
Female	1,106.3 (84.5)	1,194.4 (79.7)

Note: Salary and start-up packages assessed in US dollars, and research space assessed in square footage

Table I. Department chair recommendations for chemistry candidate by condition

main effects of candidate gender, $F(1, 34) = 2.60$, $p = 0.12$, $\eta_p^2 = 0.07$ or type of candidate, $F(1, 34) = 0.01$, $p = 0.91$, $\eta_p^2 = 0.00$, nor the candidate gender × type of candidate interaction, $F(1, 34) = 0.03$, $p = 0.87$, $\eta_p^2 = 0.00$, emerged on suggested start-up package. Finally, no main effects of candidate gender, $F(1, 32) = 0.58$, $p = 0.45$, $\eta_p^2 = 0.02$ or type of candidate, $F(1, 32) = 0.06$, $p = 0.81$, $\eta_p^2 = 0.00$, nor the candidate gender × type of candidate interaction, $F(1, 32) = 0.70$, $p = 0.41$, $\eta_p^2 = 0.02$, emerged on suggested research space. Unexpectedly, *H2* was not supported, such that valuable (and limited) resources such as salary, start-up funding and research space were not differentially allocated by Chemistry Department Chairs based on whether a candidate disclosed the need for a partner accommodation or not (see Table I).

Discussion

Results showed that among a national sample of Chemistry Department Chairs, standards did not significantly shift based on whether or not a candidate revealed the need for a dual-partner career accommodation or based on the candidate's gender. That is, no two-body bias or gender-bias emerged. Instead, male and female candidates who revealed the need for a dual-career accommodation were evaluated similarly to primary-solo-candidates on both subjective and objective measures. This null finding on the zero-sum recommendations runs counter to our Shifting Standards hypothesis, but is, in and of itself, good news for STEM candidates who are part of a dual-career couple. Of course, null results must be interpreted with caution, and the small sample size could mask important small or medium effects. That said, this initial evidence showing no penalty by hiring authorities when an academic woman (or man) in science requests a partner accommodation, suggests that policies and practices are working to normalize two-body opportunities (e.g. McCluskey *et al.*, 2016).

In Experiment 1, both candidates were the primary applicant under review. We next tested how the opportunity candidates themselves fare; do external evaluators shift standards depending on whether the candidate is the partner of a primary candidate or is an affirmative action candidate? We also set out to examine the role evaluator gender plays in hiring decisions. In Experiment 1, over 80 percent of the Chemistry Department Chairs who participated were men, thus we were unable to test for evaluator gender differences. Some research suggests that men, especially men in science, might be especially likely to shift standards of evaluation on gender equity issues (Handley *et al.*, 2015; Moss-Racusin *et al.*, 2015). On the other hand, men and women are prone to similar levels of implicit gender associations (Nosek *et al.*, 2009) and both men and women faculty negatively evaluate women's resumes for a scientific research position (Moss-Racusin *et al.*, 2012).

Experiment 2

Experiment 1 demonstrated that qualification reviews and resource recommendations by Chemistry Department Chairs were not significantly influenced by information about the candidate's need for a partner accommodation. Experiment 2 set out to investigate whether being the opportunity hire resulted in shifting standards or not. We investigated effects using a different male-dominated science discipline (Kinesiology) to provide generalizability. A recent study of Kinesiology department chairs indicated that most were Caucasian (92 percent) and male (61 percent); Kinesiology faculty, although slightly more diverse than department chairs, are still predominately Caucasian and male, especially among tenure-track positions (Ransdell *et al.*, 2018). We, thus, extended reviewer invitations to a random, nationally representative sample of men and women faculty members at all ranks in Kinesiology who may be involved in hiring decisions. Further, we explicitly set out to test the role of evaluator gender. As such, the

design of Experiment 2 was a 3 (type of candidate: affirmative action candidate, partner candidate, primary-solo-candidate) × 2 (evaluator gender: male, female) between-participants design.

Method

Participants. A list of Kinesiology departments and websites ($n = 463$) was obtained from the College Decision website, CAPPEX (www.cappex.com/colleges/majors/kinesiology-and-science-169#!p=1&). Departments were included in the study if they had a minimum of four faculty members holding a PhD Degree. From this list of Kinesiology Department websites, the total number of eligible participants in each department was entered into a random number generator and used to select which faculty member would be contacted from each department. The final stratified random sample of tenure-track male and female faculty ($N = 60$, 45.6 percent male), with females oversampled, resulted in a fairly well-balanced representation of faculty across rank: 41.7 percent assistant professor, 31.7 percent associate professor, 26.7 percent full professor[2]. Data exclusions ($N = 9$) due to incomplete data for gender, or personal experience with partner or target of opportunity hires were evenly distributed across conditions.

Materials and manipulations. Like Experiment 1, participants received invitations from the study principal investigator and the Dean of the appropriate College (Education, Health and Human Development) to participate in an "external review" for a (fictitious) tenure-track assistant professor posting. The cover story and procedure were otherwise identical to Experiment 1.

The vita and cover letter were fictional and created by the third author, using models by actual applicants for Kinesiology faculty positions during previous years. Participants always reviewed the same female job candidate (with the name D. Karen Corbett), increasing our emphasis on women's underrepresentation in science. Participants were randomly assigned to an experimental condition where the candidate was portrayed as a partner candidate, affirmative action candidate, or a primary-solo-candidate condition.

Evaluators for the affirmative action condition received the following instructions in the e-mail invitation: "The candidate for your review is Dr Corbett, who is a potential target of opportunity, affirmative action candidate. As such, time is of the essence so we can move forward as quickly as possible." In contrast, evaluators of the partner candidate condition read "The candidate for your review is Dr Corbett, who is the partner of our finalist, who informed the committee of the need for an academic partner accommodation before being willing to accept an offer. As such, time is of the essence so we can move forward as quickly as possible."

Finally, evaluators for the primary-solo-candidate condition read: "The candidate for your review is Dr Corbett. Time is of the essence so we can move forward as quickly as possible."

Measures. Dependent measures were identical to Experiment 1, with the exception that institution and discipline-specific ranges for each of the limited resources were provided. The zero-sum measures were: salary (range = \$44,000–\$62,000), start-up package (range = \$7,500–\$32,500) and research space (range = 75–250 square feet).

Results

A 3 (type of candidate: affirmative action candidate, partner candidate, primary-solo-candidate) × 2 (evaluator gender: male, female) ANOVA was conducted on potential for success. No main effects for type of candidate, $F(2, 57) = 0.75$, $p = 0.48$, $\eta_p^2 = 0.03$ or evaluator gender, $F(1, 57) = 0.56$, $p = 0.46$, $\eta_p^2 = 0.01$, nor the type of candidate × evaluator gender interaction, $F(2, 57) = 0.89$, $p = 0.42$, $\eta_p^2 = 0.03$ emerged. In support of *H1*, being

perceived as a target of opportunity or partner candidate did not decrease perceived potential for success in Kinesiology, no matter the evaluator gender.

A 3 (type of candidate: affirmative action candidate, partner candidate, primary-solo-candidate) × 2 (evaluator gender: male, female) ANOVA was conducted on recommended salary. *H2* was not supported, as there were no main effects for type of candidate, $F(2, 51) = 0.21$, $p = 0.82$, $\eta_p^2 = 0.01$. We next tested the role of evaluator gender, and although there was no main effect of evaluator gender, $F(1, 51) = 0.11$, $p = 0.74$, $\eta_p^2 = 0.00$, a type of candidate × evaluator gender interaction emerged, $F(2, 51) = 3.11$, $p = 0.053$, $\eta_p^2 = 0.11$ (see Figure 1). The interaction illustrates support for *H2* among male evaluators. Follow-up tests indicated that affirmative action ($M = \$51{,}438$, SE = 1,807) and partner candidates ($M = \$54{,}500$, SE = 1,807) received recommendations for lower salaries (vs primary-solo-candidates, $M = \$56{,}500$, SE = 1,616) if the participant evaluator was male. In contrast, *H2* was not supported among female evaluators: follow-up tests showed affirmative action ($M = \$56{,}083$, SE = 1,616) and partner hires ($M = \$54{,}722$, SE = 1,704) received recommendations for higher salaries (vs primary-solo-candidate, $M = \$53{,}000$, SE = 1,475) if the participant reviewer was female (see Table II).

A 3 (type of candidate: affirmative action candidate, partner candidate, primary-solo-candidate) × 2 (evaluator gender: male, female) ANOVA was also conducted on recommended start-up package. Similar to the findings for salary recommendations, *H2* was not supported overall, as there was no main effect of type of candidate, $F(2, 44) = 1.69$, $p = 0.20$, $\eta_p^2 = 0.07$. However, a significant type of candidate × evaluator gender interaction emerged, $F(2, 44) = 4.97$, $p = 0.01$, $\eta_p^2 = 0.18$ (see Figure 2). The interaction illustrates support for *H2* among male evaluators. Follow-up tests indicated that as with recommended salary, affirmative action ($M = \$14{,}286$, SE = 3,307) and partner candidates ($M = \$20{,}214$, SE = 3,307) were recommended for less start-up funding (vs primary-solo-candidates, $M = \$28{,}625$, SE = 3,093) if the evaluator was male. In contrast, *H2* was not supported among female evaluators: follow-up tests showed affirmative action candidates ($M = \$24{,}167$, SE = 2,916) were recommended to receive more start-up funding compared to primary-solo ($M = \$19{,}500$, SE = 2,767) or partner candidates ($M = \$18{,}500$, SE = 2,916) if the evaluator was female (see Table II).

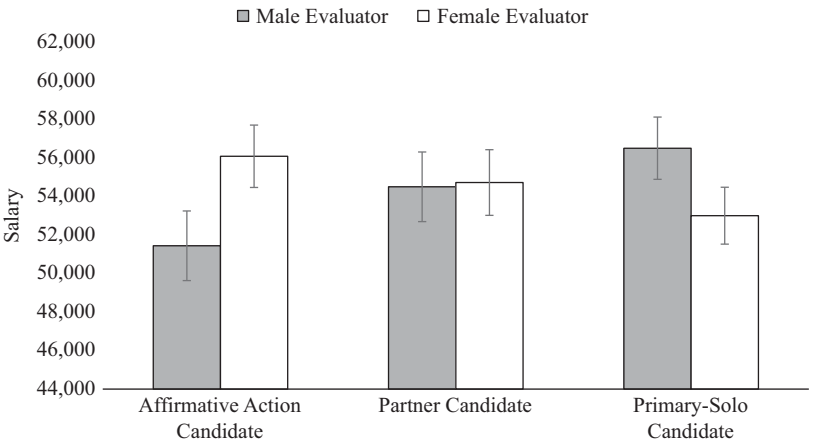


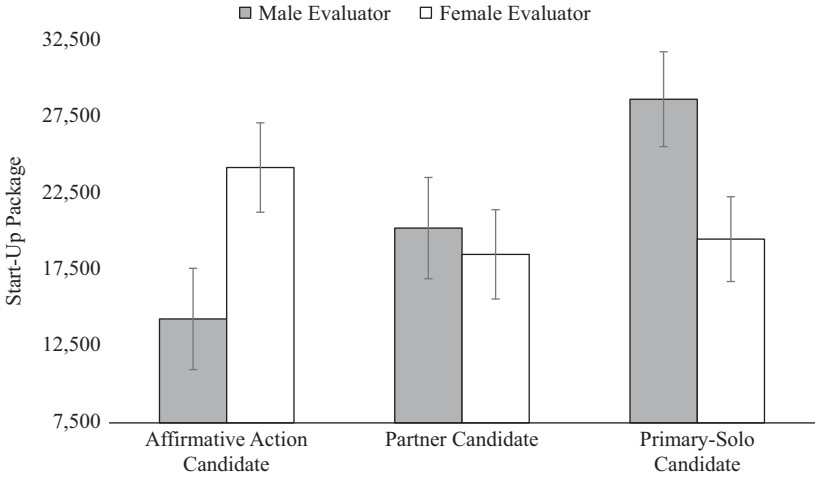
Figure 1.
Salary recommendations for Kinesiology candidates by evaluator gender and candidate type

Notes: Possible starting salaries ranged from $44,000 to $62,000 for new assistant professors in kinesiology (institution and discipline-specific ranges). Error bars represent ±1 SE

Evaluator Gender	Affirmative action candidate *M* (SE)	Partner candidate *M* (SE)	Primary-solo candidate *M* (SE)
Potential for success			
Male	2.05 (0.23)	1.93 (0.21)	1.97 (0.21)
Female	1.90 (0.20)	2.09 (0.21)	1.60 (0.18)
Salary			
Male	51,438 (1,807)	54,500 (1,807)	56,500 (1,616)
Female	56,083 (1,616)	54,722 (1,704)	53,000 (1,475)
Start-up package			
Male	14,286 (3,307)	20,214 (3,307)	28,625 (3,093)
Female	24,167 (2,916)	18,500 (2,916)	19,500 (2,767)
Research space			
Male	170.8 (21.6)	228.6 (20.0)	244.4 (17.6)
Female	200.0 (18.7)	218.8 (18.7)	200.0 (16.0)

Note: Salary and start-up packages assessed in US dollars, and research space assessed in square footage

Table II. Faculty recommendations for Kinesiology candidate by condition



Notes: Possible start-up packages ranged from $7,500 to $32,500 for new assistant professors in kinesiology (institution and discipline-specific ranges). Error bars represent ±1 SE

Figure 2. Start-up package recommendations for Kinesiology candidates by evaluator gender and candidate type

A 3 (type of candidate: affirmative action candidate, partner candidate, primary-solo-candidate) × 2 (evaluator gender: male, female) ANOVA was conducted on recommended research space. A marginal main effect of type of candidate emerged, $F(2, 43) = 2.46$, $p = 0.097$, $\eta_p^2 = 0.10$. Primary-solo ($M = 222.20$, SE = 11.90) and partner candidates ($M = 223.70$, SE = 13.70) were recommended to receive similar square footage for their research spaces, however affirmative action candidates ($M = 185.40$, SE = 14.29) were recommended to receive less square footage for their research space. No significant effects emerged for evaluator gender, $F(1, 43) = 0.30$, $p = 0.59$, $\eta_p^2 = 0.01$, or type of candidate × evaluator gender interaction, $F(2, 43) = 1.97$, $p = 0.15$, $\eta_p^2 = 0.08$. Thus, *H2* was only supported among affirmative action candidates.

Discussion

As predicted by Shifting Standards Theory, limited zero-sum ratings (and not subjective ratings) differed depending on characteristics of the candidate and evaluator. The impact of such shifting standards devaluing the opportunity candidates is clear: despite identical credentials, male faculty evaluators offered primary-solo-candidates up to $5,000 higher salary and twice as much start-up funding compared to offers to an opportunity candidate. In contrast, female faculty recommended up to $3,000 more salary and nearly 25 percent greater start-up funding to an opportunity candidate compared to the identically qualified primary-solo-candidate.

General discussion

Dual-career and affirmative action policies and practices are often part of a "promising practice" approach to transforming universities into more gender equitable places for women in science (American Association of University Professors, 2014a, b). To our knowledge, ours is the first set of experiments to systematically test for the possibility of shifting standards in dual-career and affirmative action hiring practices. We tested whether job offers depend on if the candidate provides the opportunity candidate (has an academic partner, Experiment 1) or is the opportunity candidate (is the partner of another candidate or an affirmative action candidate, Experiment 2).

Results showed that when Chemistry Department Chairs evaluated men and women candidates who explicitly identified the need for a partner accommodation, there was no significant penalty in non-zero-sum perceptions or zero-sum allocations. This good news, however, was tempered by results of Experiment 2, which showed that when Kinesiology faculty members evaluated candidates explicitly identified as the partner or as an affirmative action candidate, male evaluators offered the highest salaries and start-up compensation to primary candidates, followed by partner and affirmative action candidates; women evaluators offered the highest salaries and start-up compensation to the two opportunity candidates, with the lowest offers going to primary candidates. Space allocated by male and female faculty evaluators was similar for the primary and partner candidates, and less for the affirmative action candidate. Taken together, results suggest that although a candidate was not penalized for requesting a partner accommodation, support and resources for the opportunity candidates depended on if the evaluator was male or female. This means that while it might be fine for a woman to disclose a dual-career need in her job application, her partner might not receive the resources needed to be successful when it comes time for the job offer to be extended.

At this early stage of the research in understanding dual-career and affirmative action hiring processes, we opted to focus on department chairs in one science field and faculty members who serve on search committees in another science field. Certainly, it would be a herculean effort to recruit the necessary large and gender diverse sample from the same science field to examine all conditions within the same study. Although this research offers initial insight into shifting standards processes involved in "opportunity hires," replicating and generalizing results are an essential next step. We acknowledge that Chemistry and Kinesiology are but two of the many diverse scientific fields; however, Kinesiology findings may be generalizable to other science fields because the discipline of Kinesiology is diverse, typically including faculty with expertise in subfields related to biology, physiology, biomechanics/bioengineering and psychology. Given that our candidates were perceived to be actual candidates (rather than hypothetical applicants, e.g. Williams and Ceci, 2015) and evaluations were not constrained by institutional norms at a single university, we believe this set of studies offers an important contribution to both theory and practice.

Limitations and future directions

This set of studies provides a first glimpse into the decision-making processes involved in diversity hiring in academic science, but it is not without its limitations. Three potential

alternative explanations deserve consideration for the null findings revealed in Experiment 1: external vs internal evaluators, low statistical power and priming of gender-egalitarian norms. First, one difference between the external reviewers tested in our studies and actual internal stakeholders (e.g. department heads, faculty) is the degree of separation in working with (and working to accommodate) the potential hire. That is, it is possible that the null findings from Experiment 1 would show biases in resource allocation (as predicted by *H2*) if the potential hire was being considered at the same institution as the evaluator. Second, given the complex realistic nature of our data collection, it is possible that Experiment 1 was insufficiently statistically powered to detect small and medium effects. Third, recall that respondents received a joint invitation to participate in the external review from the Principal Investigator of the ADVANCE grant and College Dean. We cannot rule out the possibility that simply receiving the request that mentions ADVANCE may have primed gender-egalitarian mindsets among some respondents. It is thus too soon to rule out shifting standard biases, as future research must replicate and address these (and other) possible explanations.

It is important to use caution when interpreting the null results of Experiment 1, as it is also possible that there is something unique to Chemistry as a field (e.g. greater awareness of gender diversity issues) or to department chairs specifically (e.g. specialized training about broad hiring practices) that limit generalizability of the null results to other fields. It is also possible that the null hypothesis is true and that a primary candidate is reviewed similarly by a hiring authority in science no matter if the candidate explicitly notes that they are part of a dual-career couple and will require a partner accommodation. We feel it is important to add these informative (albeit null) data to the literature in keeping with the current era of open science that calls for avoiding confirmation bias in publications that too often results in a "file drawer" full of null results (e.g. Nosek *et al.*, 2015).

Another question for future research, is whether the departmental placement of the partner accommodation may impact hiring recommendations. Partner hires may occur in the same department or a different department. Experiment 2 tested whether a partner hire in Kinesiology – in the same discipline as the primary hire – was favorably perceived and supported. Given that many academic women in science partner with other men or women in the same field (Schiebinger *et al.*, 2008), Experiment 2 modeled many real-world situations. However, when a dual-career couple is seeking hiring in the same department, there may be more departmental interest (and control over funding) to make this type of hire happen. It helps the department, the new hire, and the partner – so all benefit.

By contrast, when the partner's area of expertise falls in a department other than the primary hire's, it could be seen as a "loss" or something "forced on" the other department, making it potentially more difficult to convince the other department of the merit of the hire – even if funding is provided by the hiring department of the primary candidate and Academic Affairs. The perceptions of "loss" by an outside department may include (though is not limited to): lower likelihood to justify a future faculty line within the department, less individual support and assistance from existing departmental resources (e.g. sharing of administrative assistant, departmental budget), and reduced autonomy for shaping formal (i.e. course selection) and informal (i.e. social dynamics of the department) practices. Such diverging responses to dual-career candidates based on departmental placement can be understood through the lens of zero-sum beliefs, within the Shifting Standards Theory framework (e.g. Norton and Sommers, 2011; Wilkins *et al.*, 2015). Specifically, zero-sum beliefs may be more strongly endorsed by faculty members in an outside department, which could explain the increased resistance to the dual-career candidate. Here is where emphasizing the cost-benefit of dual-career accommodations is especially important, including reassuring the partner's department of long-term benefits of what is statistically likely to be a highly productive and loyal faculty member (McCluskey *et al.*, 2016).

Future research would do well to test the impact of departmental placement and zero-sum mentality on perceptions of dual-career hires, as well as the role of gender equity initiatives such as ADVANCE. This could be accomplished by conducting in-depth interviews of department leaders, colleagues, and the partners and primary hires themselves. An analysis that examines partner hires who are in the same unit compared to a different unit, in universities that do – and do not – have policies or practices about dual-hires would provide nuance and depth to what is a very complex situation.

Practical implications

There are numerous barriers to recruiting and retaining women and other underrepresented minority faculty in academic science, including (but not limited to): less than optimal mentoring and networking (Ransdell, 2014), fewer prestigious post-doctoral opportunities (Sheltzer and Smith, 2014); lukewarm recommendation letters that overemphasize personality (Schmader *et al.*, 2007); devalued scholarship (Knobloch-Westerwick *et al.*, 2013) and less success securing grants and start-up funding (Ginther *et al.*, 2011). This list, unfortunately, can go on and on, but boils down to pervasive, structural, and subtle biases in the academic workplace (e.g. Carnes *et al.*, 2015; Fox, 2015; Moss-Racusin *et al.*, 2012; Reuben *et al.*, 2014).

The preliminary good news from the current data was that being a Chemistry assistant professor applicant with a dual-career need was not yet another source of bias. Identifying the need for a partner accommodation is only the first step; that partner must also interview and then compete for limited zero-sum resources. Experiment 2 illustrated that a two-body opportunity candidate and a target of opportunity candidate may not necessarily receive the resources they need to be successful, depending on the gender of the person with whom they are negotiating. One possible explanation is that in Kinesiology, men (currently in more leadership roles and in the numerical majority in this discipline), are less familiar with the need for enhancing diversity and the benefits ensued by supporting opportunity candidates, whereas women in the field may be more aware of the current lack of diversity and are thus more supportive of opportunity candidates. Although we did not test for this possibility, this speculation is in line with Cultural Matching Theory (Rivera, 2012), which predicts that people tend to have an "affinity bias" and want to hire others who share a similar plight to themselves via a commonality in knowledge, experience, interests, and self-presentation skills. Future research could test this possibility to explain why primary-solo-candidates received higher salary and start-up resources from men whereas partner and affirmative action candidates received higher salary and start-up resources from women.

It is important to stress that men in academic science serve as gatekeepers, and their skepticism about gender-bias (Handley *et al.*, 2015), coupled with their social power to maintain the status quo (Jost *et al.*, 2004), especially when in competition for limited resources (Norton and Sommers, 2011) are a barrier to diversifying the academy. As such, efforts that aim to diversify the institution must not just focus on "fixing" the women candidates and coaching them on how to apply for jobs, but must also emphasize changing implicit attitudes, especially among men who are most often in positions of power to transform their institutions. Bias literacy training, for example, is an effective tool that improves faculty's feelings of self-efficacy for engaging in gender equity behaviors (Carnes *et al.*, 2015). Modeling an inclusive democratic process through facilitated departmental-level workshops is also an effective tool for building feelings of collective efficacy toward gender equality (Latimer *et al.*, 2014). Indeed, theoretically informed search training interventions targeted at faculty are effective in improving the number of women faculty hired in science, engineering and mathematical fields (e.g. Sheridan *et al.*, 2010; Smith *et al.*, 2015). Our results suggest that it is important that such search training efforts incorporate modules that specifically address eliminating possible bias toward opportunity candidates.

Results point to the need for changes to academic search protocols to safeguard against shifting standards toward affirmative action and partner accommodation candidates. We situate our findings on dual-career and affirmative action opportunity hires within the broader context of environmental factors and institutional norms. Applying a gendered organizations perspective, higher education institutions have been considered a "gendered bureaucracy," with gender equity issues not solved by solely increasing representation (Mitchneck *et al.*, 2016; Morimoto *et al.*, 2013). Indeed, considerations regarding opportunity hires must be coordinated across all bureaucratic levels of the university – from administrators (e.g. investment by senior diversity officers), to college leadership (e.g. budgeting for opportunity hires by Deans), to individual faculty members (e.g. partner accommodation and affirmative action training provided to search committees). As Morimoto and colleagues (2013) assert, because "policies are susceptible to backlash if deeply embedded gendered culture, climate and cognitive schemas are also not simultaneously addressed," careful attention must be given to the initial experiences of opportunity hires to ensure that they are provided quality mentoring, develop a sense of belonging, and that university messages reinforce values of equity and inclusion at all ranks (e.g. faculty, staff, and student) (Morimoto *et al.*, 2013, p. 410).

These findings inform current sustainability efforts at ADVANCE funded institutions and offer insight to other universities that are considering opportunity hire practices. For example, the ADVANCE Project TRACS program at Montana State University considered partner accommodations and target of opportunity hires as part of the "enhancing cultural attunement initiative" because of the education needed to counteract possible biases toward the candidates, while simultaneously affording autonomy to committees to not feel "forced" into a given hire. To do this, the Project TRACS program designed a process to request such opportunity hires, in which department heads complete a form (see the partner request form, for example, www.montana.edu/provost/faculty/hiring.html) to detail the strengths of the candidate, how the candidate contributes to the university's strategic plan, how the partner adds to the diversity mission, and what resources are needed for the hire. Clear instructions for considering the opportunity candidate are outlined on the form, empowering the department for a successful recruitment. Candidates themselves are made aware of these opportunity hire options during their on-campus interview meeting with a "Family Advocate," who is a trained faculty member that is a confidential point of contact about these (and other) issues (see Smith *et al.*, 2015 for details on the family advocate candidate meetings).

This research is important because small differences in pay or start-up result in an "accumulation of disadvantage" (Valian, 1998). Even if we assume a very small shifting standard toward a partner hire or an affirmative action hire (accounting for as little as 5 percent of the variance) research shows that such "death by a 1000 cuts" results in a loss of opportunity somewhere between 29 and 50 percent (Martell *et al.*, 1996). Although we explicitly focused on hiring decisions, institutions must go beyond just hiring more women and underrepresented minorities in science, and truly transform the institution to be more inclusive and equitable (Mitchneck *et al.*, 2016) so that once that person is hired, they continue on a long, productive and satisfying journey at the institution. To do this, necessarily means ensuring that everyone has the resources they need to be successful.

Notes

1. Based on 80 percent power estimates using G*Power 3.1 (Faul *et al.*, 2007), there was likely sufficient power to detect a large effect size ($N = 52$) but insufficient power to detect a medium ($N = 128$) or small effect size ($N = 787$).
2. Based on 80 percent power estimates using G*Power 3.1 (Faul *et al.*, 2007), there was likely sufficient power to detect a large effect size ($N = 64$) but insufficient power to detect a medium ($N = 158$) or small effect size ($N = 967$).

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