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Abstract

We analyse if and how the characteristics of grant research panels affect the applicants' likelihood of obtaining funding and, especially, if particular types of panels favor particular types of applicants. We use the award decisions of the UK's Engineering and Physical Sciences Research Council (EPSRC). We show that not only applicants' but also panels' characteristics matter. Panels of higher quality, in terms of prior research performance, for instance, as well panels that include more female members or members of Mongoloid origin, are tougher than others. Our main results indicate that panel members tend to favor more (or penalise less) applicants with similar characteristics to them, as the similar-to-me hypothesis suggests. We show, for instance, that the quality of the applicants is more critical for panels of the highest quality than for panels of relatively lower quality, that basic oriented panels tend to penalise applied-oriented applicants, and that panels with less female members tend to penalise teams with more female applicants.

Keywords: Funding organization, scientific evaluation, similar-to-me, panel composition, research grants

JEL Classification: I23, O32

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1 Introduction

Many organizations rely on panels or committees to evaluate applications and candidates in merit-based selection procedures. Funding agencies, for instance, rely on peer review panels to judge the quality of grant applications. In such merit-based selection procedures, the individual probability of success should depend on the characteristics of the applications but not on the characteristics of the panels. Panels, however, may have different levels and types of expertise, views about the requirements, and/or preferences for particular types of applicants. All of this may affect panels' evaluations and decisions, thereby generating a "luck of the reviewer draw" for the applicants or for particular types of applicants (Cole et al., 1981).

This paper analyses if and how the characteristics of the grant research panels affect the applicants' likelihood of obtaining funding and, especially, if particular types of panels favour particular types of applicants. We study if some types of panels are tougher than others and if the applicants' connections to the panel influence their likelihood of success. But our focus is to understand if, conditional on all this, there exist "similar-to-me" effects in the grant selection process. According to this hypothesis, tested primarily on the labor market context, applicants will be rated more favorably the more similar they are to the rater (Byrne, 1971). We test if the individual probability of success depends on the similarities of the applicants and the grant evaluation panel in a broad range of research-related and demographic attributes.

We make use of the award decisions of one of the major public funding organizations for scientific research worldwide, the UK's Engineering and Physical Sciences Research Council (EPSRC). Our dataset includes the EPSRC applications and panels between 2000 and 2007. We obtain prior publication data of the teams of applicants and panelists and some of their personal attributes. We use this information to construct variables reflecting research-related (research quality and orientation) as well as demographic characteristics (affiliation to an elite Russell-group university, the ratio of females, and the presence of members of a Mongoloid origin) of the team of applicants on one side, and of the panels, on the other. We base our choice of drivers of applicant success on previous literature (e.g., Grimpe, 2012) and build equivalent variables for the panel members to perform a systematic two-sided comparison.

As a starting point, we first introduce in the analysis and document the effects on the probability that a project is awarded funding of the characteristics of the team of applicants as well as of the panels. Our results on the applicant characteristics are broadly consistent with those of previous literature (e.g., Grimpe, 2012, Banal-Estañol et al., 2019a, 2019b). As one would expect, the probability of success is higher for more accomplished applicants. In terms of magnitude, a one standard deviation increase in the applicants' research performance increases the probability of success by 2.1% or 7.1% of the unconditional probability of success. Moreover, more applied-oriented teams, those who do not belong to an elite university, and those that include more women and at least a member of Mongoloid origin are less successful.

As compared to most of the previous literature, we find that panel characteristics are also important. More accomplished panels are more demanding, but those with more members affiliated to an elite university are not. In terms of magnitude, a one standard deviation increase in panel's research performance decreases the probability of success by 2.6% or 8.6% of the unconditional probability of success. This effect, in absolute value, is stronger than the one of the applicants. Panels with more female members and those that include members of Mongoloid origin are also less likely to award grants. The results on tougher female panelists are consistent with those of the few papers that analyse the effects of panel characteristics (Jayasinghe et al., 2003, and Tamblyn et al., 2018). Except for gender, we know relatively little about the role that the characteristics of the panels play in funding decisions.

We also control for the links between applicants and panels. We find that applicants benefit from having experience as a panelist. This is akin to the result of Viner et al. (2004), who, using data from the EPSRC, associate success in securing grants with experience in the peer review system. But we do not find evidence of "nepotism." The likelihood of success does not change if the affiliation of the panel members coincides with that of the applicants or with the universities where the applicants earned their Ph.D. This contrasts with the few existing results on nepotism through institutional ties. Wenneras and Wold (1997), as well as Sandström and Hällsten (2008), show that applicants sharing an institutional affiliation with the panels were more likely to be successful in the award decisions of the Swedish Medical Research Council.[1]

Our main analysis shows that the effects of the characteristics of the applicants differ by the type of panel evaluating their application. Distinguishing panels by prior research performance, we show that the quality of the applicants is more critical for panels of "top" quality than for panels of relatively lower quality. In terms of magnitudes, a one standard deviation increase in the applicants' research performance increases the probability of success by 11.0% of the unconditional probability of success if evaluated by a top panel whereas it is increased by just 4.3% of the unconditional probability of success if evaluated by a non-top panel. Distinguishing between "applied" and non-applied "basic" research-oriented panels, we show that the degree of appliedness of the applicants decreases the chances of success for the basic but not for the applied panels. Finally, we classify the panels based on the personal attributes of their members, e.g., "female/non-female" and "Mongoloid/non-Mongoloid." Our analysis indicates that non-female

[1] Nepotism through family ties, or more generally favoritism, in academic recruitment and promotion, has received more attention in the literature (see, e.g., Allesina, 2011, and Durante et al., 2009).

panels tend to penalise female applicants, whereas female panels do not. Non-Mongoloid panels also tend to discriminate against Mongoloid applicants, whereas Mongoloid panels do not. As a sole dimension that does not provide full support for our main hypothesis, Russell panels do not tend to favour teams from the Russell group of universities more than the non-Russell panels do.

Therefore, our results suggest that, generally, panel members favour more (or penalise less) applicants with similar characteristics to them, as the similar-to-me hypothesis suggests. A preference-based social psychology theory supports the similar-to-me hypothesis. There are two arguments: self-categorization (Turner et al., 1987) and similarity-attraction (Byrne, 1971). According to the self-categorization paradigm, our self-concept is based upon the social categories we place ourselves in (e.g., gender, race), and we desire to have a positive self-identity. The need for a positive self-identity causes us to prefer and evaluate more positively those similar to us on the social category on which we base our identity. This theory may explain the similar-to-me effects we find for gender and race. Although research-related characteristics may not be considered standard social categories, broad categories (based, for instance, on research performance or orientation) may also be self-descriptive and thus serve as useful social categories that are important in describing the self and others.

According to the similarity-attraction paradigm, an affective response (e.g., interpersonal attraction or liking) mediates the relationship between similarity and evaluation. Similarity can be actual or perceived, whereby the latter refers to the similarity a particular individual infers between oneself and an interaction partner. Both actual and perceived similarity effects on key traits, values, and/or beliefs have been previously demonstrated in studies of interpersonal attraction in human resource decisions (e.g., selection decisions). For instance, Ferris and Judge (1991) argue that perceived similarity may come into play because decision-makers act upon their perceptions of reality. Therefore, judgments of similarity may require some degree of cognitive interpretation (e.g., the rater perceives the applicant as similar in the research orientation) before an affective attraction can ensue (Srull and Wyer, 1989). In this sense, the elite/non-elite Russell group categorization may be less clear for the academic researchers than the other categorizations we use in the paper.

Our paper contributes to the literature that studies how the likelihood of being funded in a merit-based selection procedure depends on the characteristics of the applicants and those of the panel members. Except for gender, we know relatively little about the role that the characteristics of the panel play in funding decisions.[2] Likewise, very few papers have analysed

[2] A more extensive literature has analyzed the effects of the characteristics of the applicants. Grimpe (2012), for instance, shows that obtaining German grants is often not influenced by publication or patent stock but by

the effects of cross-variables of applicants and panel members. Furthermore, and to the best of our knowledge, only Jayasinghe et al. (2003), Tamblyn et al. (2018), and Li (2017) have results on which type of panels favour which type of applications. Jayasinghe et al. (2003), using data from the Australian Research Council grants, do not find significant effects of the interaction of the applicant and assessor gender. Using Canadian health research grant applications, Tamblyn et al. (2018) find that reviewers with more expertise are more likely than those with less expertise to provide higher scores to applicants with higher past success rates. Li (2017), using data from the US National Institutes of Health, finds that increased relatedness between applicants and panelists, measured by cross-citations, raises the applicants' chances of winning a grant. But, to our knowledge, the "similar-to-me" hypothesis has not been systematically tested in the grant application process.

This paper also contributes to the empirical literature that tests for "similar-to-me" effects in evaluation and selection procedures. Most of the existing evidence on these effects is in the context of the labor market selection process. Moreover, most of this literature has focused on readily detectable demographic dimensions, such as race (e.g., Prewett-Livingston et al., 1996) or gender (e.g., Bagues and Esteve-Volart, 2010), rather than on less visible functional dimensions that are more job-related, such as the research-related attributes in academia. Two exceptions in this sense are Hamermesh and Schmidt (2003) and Bagues and Pérez-Villadoniga (2012), who examine the election of Fellows of the Econometric Society based on the research area and the entry to the Spanish Judiciary based on the area of expertise, respectively.[3]

The rest of the paper is organised as follows. Section 2 describes the data sources and the variables constructed. It also includes the descriptive statistics. Section 3 presents the effects of the research and personal characteristics of the team of applicants and the panel members on

other personal, institutional, and discipline characteristics. Banal-Estañol et al. (2019a) and (2019b) show that scientific performance and institutional eminence are important determinants of success in EPSRC grants, whereas more applied academics find it more difficult to obtain financing. Tamblyn et al. (2018) find that grant applicants to the Canadian Institutes of Health with a higher h-index get higher scores. In contrast, female applicants and applicants in the applied sciences get lower scores. Jayasinghe et al. (2003) find that those from more prestigious universities received higher ratings, whereas female researchers receive lower ratings than male researchers in science. Viner et al. (2004) suggest that factors other than the quality of the research influence outcomes. They identify, in particular, biases against women and non-white groups. Wenneras and Wold (1997) also find evidence of gender bias in grant applications to the Swedish Medical Research Council.

[3] The human resource literature does not always support the similar-to-me hypothesis. Bagues and Esteve-Volart (2010) and Zinovyeva and Bagues (2015) find that female candidates are less likely to be hired and promoted when the randomly assigned selection committee has a higher percentage of female evaluators. Bagues et al. (2017) show that a larger number of women in evaluation committees does not increase the quantity or the quality of female candidates who qualify in the competitions to professor positions in Spain and Italy. On ethnicity, Bursell (2007), using Swedish data on job applications, finds that the applicants with a Swedish-sounding name are more likely to receive a call-back if the CEO has a foreign-sounding name than if he has a Swedish-sounding name.

the probability of a project being funded. Section 4 studies how the resemblance between the characteristics of applicants and panel members may affect the likelihood of success. Finally, Section 5 concludes.

2 Data, variables and descriptive statistics

We analyse the award decisions of the EPSRC, the main UK government agency for funding research in engineering and the physical sciences.[4] The EPSRC relies on peer review panels to judge the quality of applications competing for funding. The EPSRC peer review panels are responsible for placing the applications in a funding priority order, based on which the final funding decision is made. The composition of the panels is not known ex-ante by the applicants, so it is not possible for them to self-select into a specific panel.

Our database emanates from the EPSRC grant applications from 2000 to 2007 (both included), from which we build variables describing the applicant teams, the evaluating panels, and the award decisions. We now describe in detail the data sources, the variables we use in the analysis, and their main descriptive statistics.

2.1 Data sources

For each application, the EPSRC records contain the name of the principal investigator (the PI) and the coinvestigators (the other team members), the start and end dates, the holding organization of the grant, and the amount of funding requested. The PI must be an academic from a UK organization. In almost all the applications, the PI and the co-investigators are employees of the same holding organization. We also know whether the application has been funded or not, as well as the name and the affiliation of each of the panel members who took the funding decision on that specific application. Unfortunately, we do not have information on the application grades or other details of the decision.

All the EPSRC grant applications are matched with the academic calendar census data of all the engineering departments of the 40 major universities in the UK (see Banal-Estañol et al., 2015, for details). Our sample includes the applications that contain at least one academic engineer of the calendar database as a PI or as a co-investigator. We discard the applications of teams of more than 10 academics so that individual characteristics matter, but the results are very similar when we include all the proposals (only 1.5% of the applications involve more

[4] The EPSRC plays a crucial role in the researchers' activity, academic career, and the universities' budget. More than half of the overall research funding of the engineering departments in the UK comes from the EPSRC.

than 10 academics). Our final sample has 7,189 applications over 8 years (2000-2007), which include at least one researcher with complete information.

We use prior publication data to identify research-related attributes of applicants and panelists. For each of them, we identify all their publications in the Web of Science (WoS) five years before the application date. For each of these publications, we identify (i) the number of citations received by December 2007 and (ii) the publishing journal's orientation category in the Patent Board classification (defined by Narin et al., 1976, and Hamilton, 2003).[5] This information allows us to proxy for a given researcher's research quality and orientation, respectively, at the time of the grant application.

We also obtained personal attributes of the applicants and panelists. The EPSRC database allows us to determine whether they work at one of the prestigious set of universities of the Russell Group. We identified the gender from the given names and their personal web pages (searching for the given name and affiliation). We also identified whether they are of Mongoloid origin from the 200 most common Mongoloid family names, complemented by a manual check.[6] Finally, we obtained information on the Ph.D. granting institution of each applicant, using specialized websites (*ethos.bl.uk/Home.do* and *www.theses.com*) and their web pages.

2.2 Variables

We now provide a definition of the dependent and independent variables that we use to explain the likelihood of obtaining funding. We base our choice of variables on the applicant characteristics in previous literature (e.g., Grimpe, 2012, and Banal-Estañol et al., 2019a) and build equivalent variables for the panel members. We describe, in turn, applicant and panel member characteristics, cross-variables, controls, and the variables that are going to allow us to classify the types of panels. Table 1 provides a summary of all the variables.

[Insert Table 1 here]

Dependent variable Our binary dependent variable takes a value of 1 if the application was awarded funding and 0 if it was not.

[5] Citations are generally accepted as scientific merit since they measure the impact of the research results on other scientists (Bornmann and Daniel, 2005, Cole, 2000, and Tijssen et al., 2002).

[6] Mongoloid researchers have significant contributions to engineering and the physical sciences. To identify this ethnic minority group, we follow Lauderdale and Kestenbaum (2000) and Shah et al. (2010) and use South Asian, Chinese, Korean, and Japanese surnames.

Applicant characteristics We construct vertical and horizontal research-related measures of the applicants. To build a vertical measure of research quality, we count the number of "normalized" citations of each researcher's publications in the five years before the application. The normalized number of citations of a given publication is obtained by dividing the number of citations received by that publication by the average number of citations received by all the papers published in the same year and the same field as that publication. We define the variable *Acad Quality app* as the average number of normalized citations per year, and the variable *Acad Quality PI* as the average number of normalized citations per year of the PI, as the team leader.

As a horizontal measure of research orientation, we construct a variable of how applied, relative to how basic, the research of each researcher is. To construct the measure, we use the four categories of the Patent Board classification of journals: (1) applied technology, (2) engineering and technological science, (3) applied and targeted basic research, and (4) basic scientific research. Part of the prior research considers the first two categories applied and the last two basic (Breschi et al., 2008), while other authors consider the first and the third categories applied and the second and the fourth basic (van Looy et al., 2006). We define the degree of applied orientation of a researcher as the fraction of her publications in the previous five years in the first category relative to the publications in all four categories. This measure allows us to reflect the research orientation on a continuous $[0, 1]$ interval scale. We define the variable *Applied Orient app* as the average degree of applied orientation of the application team, and the variable *Applied Orient PI* as the applied orientation of the PI.

We also construct vertical and horizontal personal characteristics of the applicants. We define the dummy variable *Russell Gr app*, which takes the value of 1 if the host institution is (and thus, whether the applicant team members are from) one of the Russell Group universities. We define the variable *Ratio Female app* as the fraction of females in the application team. We also define the dummy variable *Mongol app*, which indicates whether at least one of the applicant team members is of Mongoloid origin. Similarly, we create two dummy variables: *Gender PI*, which equals 1 if the PI is a female, and *Mongol PI*, which equals 1 if the PI's race is Mongoloid.

Panel member characteristics We construct analogous variables for the panel members as we do for the members of the applicant team. In particular, we create the variables *Acad Quality pan* and *Applied Orient pan* for each panel to measure the research-related vertical and horizontal characteristics of each panel. As personal characteristics, we define the variable *Ratio Female pan* as the percentage of women in the panel and the dummy variable *Mongol pan* to identify whether at least one panel member's race is Mongoloid.

We define the variable *Russell Gr pan* in a slightly different way than *Russell Gr app*, as the median percentage of panel members from the Russell group is above 80% (only ten panels did not include a researcher from the Russell group). Therefore, we define the variable *Russell Gr pan* as a dummy variable that indicates whether the panel has a fraction of members from the Russell group larger than the median fraction of all panels.

Cross variables We include three "cross-variables" between the applicants and panels, i.e., variables that use information from the two sides. The dummy variable *Experience as Panelist* indicates whether at least one member of the applicant team had the experience of being a panel member before the date of application. We also use two variables that capture connections between applicants and panel members. We create the dummy variable *Connection as Colleague*, which measures whether there is an applicant and a panel member who are from the same university, and the dummy variable *Connection as Pre-doc*, which indicates whether there is an applicant who defended the Ph.D. in one of the universities of the panel members.

Control variables We include the size of the applicant team (*Size Team app*) and the square of the size (*Size Team app sq*). That is, we allow for non-linear effects, following the results of the team science literature (for a review, see von Tunzelmann et al., 2003). Similarly, we include the size of the panel (*Size pan*) and the square (*Size pan sq*).

Our regressions also control for the *Duration* of the project and the per-capita amount of funding requested (*Funds per cap*). Moreover, in all the regressions (following Banal-Estañol et al., 2019a), we include the overall fraction of money awarded in that quarter, denoted as *Fraction Awarded*, and constructed as the ratio between the total amount of funds disbursed by our EPSRC panels and the total amount requested.

Types of panels We classify panels using research-related and personal characteristics. We consider a panel "Top," and define the dummy variable *Top pan* if its research quality is in the first quartile of the distribution of the quality of all the panels. Similarly, we consider a panel "Applied," and define the dummy variable *Applied pan*, if the panel's applied orientation, i.e., its level of appliedness, is above the median of all the panels.

At the personal level, we consider a panel "Russell" and "Female," and define the dummy variables *Russell Gr pan* and *Female pan*, if the fraction of members of the Russell group and of females is above the median fraction of all the panels, respectively. As mentioned above, we create the dummy variable *Mongol pan* for the panels that include at least one Mongoloid member.

2.3 Descriptive statistics

We present descriptive statistics of the main variables in Table 2. The percentage of applications that are successfully awarded is almost 30%. The applicants' average normalized citations per year are 7.21, and the average applied orientation is 0.24.[7] Over 79% of applications originate from a university of the Russell group. The average percentage of female researchers in application teams is 6.4% (over 13% of the application teams include at least one female researcher). Around 13.2% of the application teams have at least one Mongoloid researcher.

[Insert Table 2 here]

For panels, the average academic quality and the average applied orientation are 33.7 and 0.2, respectively. By construction, roughly half of the panels have a percentage of Russell group members above the median percentage of all panels (the median is 80%). The average ratio of female members in panels is 11.3% (around 64% of panels include at least one female member). Almost 19% panels include at least one member whose race is Mongoloid.

Finally, in our database, 31.9% teams include at least one academic who has experience being a panel member before the application. More than 23% of the applications are evaluated by a panel that includes at least a member affiliated with the host institution. Similarly, a team member obtained the Ph.D. from the university of a panel member in more than 25% of the applications.

In addition, Table 2 shows that the average number of researchers in an application team is 2.5, the average size of a panel is 9.7, and the average duration of a project is 2.85 years. In terms of money, the amount requested per capita for the whole duration of the project is £136,000. The average overall fraction of money awarded within a given quarter is 0.31.

3 Basic determinants of success

This section shows the effects, on the probability that an application is awarded funding, of the research and personal characteristics of the team of applicants, on the one hand, and of the panel members, on the other. We also analyze the effects of the cross-variables. We will use the analysis in this section as a basis of our main analysis, of how particular types of panels treat particular type of applications, described in the following section.

[7] As a reference, note that if the publications were homogeneously distributed among the four categories, the average applied orientation would be 0.25.

Table 3 shows how the likelihood of having a grant awarded depends on the characteristics of the applicants, those of the panel members, the cross variables, and the controls. The coefficients reported correspond to the marginal effects of a probit regression.[8]

[Insert Table 3 here]

Applicant characteristics In terms of research characteristics, row 1 in column 1 shows, as one would expect, that a more accomplished team of applicants, in terms of citations, is more likely to succeed. This is consistent with the results in prior literature (e.g., Grimpe, 2012, and Tamblyn et al., 2018). In terms of magnitude, a one standard deviation increase in applicants' research performance increases the probability of success by 2.1% (1.250*0.017=0.021) or 7.1% of the unconditional probability (0.021/0.299=0.071).

Considering the team's research orientation (row 2), more applied teams are less likely to be successful (as in Tamblyn et al., 2018, and Banal-Estanol et al., 2019a, 2019b). The effect of this (horizontal) characteristic is also significant, although weaker than that of research performance. In terms of magnitude, a one standard deviation increase in applicants' applied orientation decreases the probability of success by 1.1% (0.312*0.036=0.011) or 3.7% of the unconditional probability (0.011/0.299=0.037).

In terms of demographics, the applicants' affiliation to a university (the host institution of the project) that is part of the elite (Russell) group positively affects the probability of success (row 3). In terms of size, it represents 10.7% of the unconditional probability (0.032/0.299=0.107). Note that this effect is additional to that of the quality of their research. This is consistent with the results of Peters and Ceci (1982), who showed that researchers affiliated with prestigious institutions tended to fare better than colleagues at less prestigious ones in the publication process.

In terms of the personal traits, teams that include more female researchers (row 4) or academics of a Mongoloid origin (row 5) are less likely to succeed in the grant application process. However, the first effect is not significant in the first regression. These results are also consistent with those of previous literature on the effects of gender and race in the grant application process (e.g., Viner et al., 2004, and Wenneras and Wold, 1997).

Panel member characteristics Turning to the characteristics of the panel members evaluating a particular grant, being assessed by a more accomplished panel, again in terms of citations, decreases the chances that the application is awarded (row 6). This result suggests, interestingly

[8] Results are similar if we use instead a linear probability model.

but perhaps unsurprisingly, that higher academic quality panels are more demanding. In terms of magnitude, a one standard deviation increase in the panel's research performance decreases the probability of success by 2.6% (2.600*0.010=0.026) or 8.6% of the unconditional probability (0.026/0.299=0.086). This effect, in absolute value, is stronger than the one of the applicants.

In contrast, the average applied orientation of the panel and whether they have relatively more members affiliated to a Russell group university do not affect the likelihood of success (rows 7 and 8). Panels that include more female members and those that include members of a Mongoloid origin are also less likely to award the grant (rows 9 and 10). Our results on gender are consistent with those of the few papers that analyse the effects of panel characteristics on grant success (Jayasinghe et al., 2003, and Tamblyn et al., 2018). We do not know of previous research that has studied the effects of the other characteristics.

Cross variables Column 2 highlights that teams of applicants with at least one researcher with experience as a panel member have higher chances of success, conditional on the rest of the characteristics of the applicants and panel members. We also analyse the effects of the links between the applicants and the panel. Column 3 shows that they are not significant: the likelihood of success does not change if the affiliation of a panel member coincides with that of a team member or with the university where s/he earned the Ph.D. Column 4 confirms the results of the previous columns when we include all the cross-applicant-panel variables together.

Our results on experience are in line with those of Viner et al. (2004) who, using data also from the EPSRC, associate success in securing grants with experience in the peer review system. But our connection results stand in contrast with those of Wenneras and Wold (1997), as well as Sandström and Hällsten (2008), who show that applicants sharing an institutional affiliation with the panels were more likely to be successful in the award decisions of the Swedish Medical Research Council.

Control variables In terms of controls, the number of applicants has a non-linear, U-shaped effect on success. The project's duration has a positive impact, whereas the amount requested per person harms the chances of success. This is consistent with previous results (Banal-Estañol et al., 2019a). The size of the panel does not affect the likelihood of success in any way. Naturally, we find that applications in periods where grants are more likely to be awarded have a higher chance of success.

Robustness We will use column 4 as a basis for the analysis of the next section. It highlights, in particular, the average effects of the panel characteristics on the applicants' likelihood of success. Column 5 shows that the previous average effects results are maintained if we use the characteristics of the PI rather than those of the whole team of applicants. The only difference is that the degree of appliedness does not longer significantly affect the chances of success, whereas being a female PI harms the likelihood of success, now, significantly. We also note that the PI's academic quality has a stronger influence than that of the whole team.

Finally, column 6 shows that the results for the characteristics of the applicant teams and the cross-applicant-panel variables are similar when we include panel fixed effects. Analysing the overall impact of the panel characteristics is one of our main objectives. For this reason, we will not include panel fixed effects in the following section. We prefer keeping the variables that reflect the characteristics of the panel. Untabulated regressions show that all the results present in the following tables hold if we use panel fixed effects instead of the panels' variables.

4 Similar-to-me effects

The previous section shows that not only the characteristics of the applicants but also the characteristics of the panels influence the award decisions. Some panels are tougher than others. This section goes a step forward. We investigate how the effects of the characteristics of the applicants vary with the characteristics of the panel evaluating the application. We put particular emphasis on understanding whether panel members favor (or penalise less) those academics with characteristics similar to theirs, as the "similar-to-me" hypothesis suggests.

We follow two empirical strategies. First, we run split sample regressions based on the panels' research-related and personal characteristics (top vs. non-top, applied vs. non-applied or basic, Russell vs. non-Russell, female vs. non-female, and Mongoloid vs. non-Mongoloid). We compare the coefficients of these regressions with those of the (average effects) regression of the previous section (column 4 of Table 3). As in the previous section, the coefficients correspond to the marginal effects of the probit regressions. Second, we define dummy variables using the same panel classifications and run and interpret interaction effects regressions, interacting these panel variables first with all the applicant variables and then with the corresponding applicant variable. We report, in this case, the coefficients rather than the marginal effects, as there are no marginal effects for the interaction terms. All regressions include all the variables of the previous section, although the coefficients of the controls are not displayed.

4.1 Top vs. non-top panels

Table 4 distinguishes panels by research performance of their members, proxied by the average number of citations of their members (top quartile vs. bottom three quartiles of the distribution of panels). As a reference, we keep the results of the "average effect" regression of the previous section, reporting its marginal effects in column 1 (i.e., the same as column 4 of Table 3) and the coefficients in column 4.

[Insert Table 4 here]

Columns 2 and 3 show that the research quality of the applicants is more important and more significant for panels of the highest quality than for those of relatively lower quality. In terms of magnitudes, a one standard deviation increase in the applicants' research performance increases the probability of success by 3.3% (1.250*0.026=0.033) or 11.0% of the unconditional probability if evaluated by a top panel (0.033/0.299=0.110) whereas it is increased by just 1.3% or 4.3% of the unconditional probability of success if evaluated by a non-top panel. The empirical p-value in Fisher's permutation test is 0.062, which suggests that the difference in the coefficients of the two groups is statistically significant.[9] Thus, top panels are not only more demanding, in general, but they care more about the applicant team's research performance than the other panels. In terms of magnitudes, a one standard deviation increase in the applicants' research performance increases the probability of success by an additional 6.7% of the unconditional probability if it is evaluated by a top rather than by a non-top panel. These regressions also suggest that the reference (average) effects of the quality of the applicants, discussed in the previous section, and displayed again in Column 1, are mainly driven by the top quality panels.

Columns 5 and 6 show that the results are similar when using an interaction approach rather than a split-sample approach. They present the coefficients of the regressions when we include, in addition to the variables in Column 4, the interaction of the applicant's variables with the dummy "Top pan," which indicates whether the panel is in the top quartile of quality. Column 5 shows that the main effect of the applicant citations, i.e., the impact for the bottom three panels, is non-significant. Instead, the interaction term is positive and significant, indicating that the quality of the applicants is significantly more important for the panels of the highest quality. Column 6 confirms that the result is the same if, instead of interacting the top panel variable with all the applicant variables, we only interact it with their quality.

Figure 1 provides a graphical representation of the results of Column 5. We depict the estimated probability of success for a team of an average research performance, as well as

[9] Fisher's permutation test is used to test whether there is a significant difference between the coefficients in different groups. For more details see, for instance, Soms (1977).

for those at one standard deviation above and below that average. As explained before, the probability of success of an average team, in terms of research performance, is lower if evaluated by a top panel rather than by a non-top panel. But an increase in the applicants' research performance increases the probability of success by more if they are evaluated by a top rather than by a non-top panel, i.e., the slope is steeper. Still, for all the range depicted, the probability of success of an applicant team is always lower if evaluated by a top panel.

[Insert Figure 1 here]

These results show that the similar-to-me hypothesis is satisfied along the research performance dimension in the grant selection process. Following the social psychology theory, high-performers may consider themselves a social category. The desire to have a positive self-identity makes high-performing panel members reward high-performing applicants more strongly (Turner et al., 1987). Although research-related characteristics may not be considered standard social categories, high-performing individuals may see themselves as a self category that differentiates them from low-performing individuals. Similarly, high-performing individuals may consider other high-performing individuals attractive, as they are perceived to be similar in attitudes and values. This association might also affect evaluation decisions (Byrne, 1971).

Our setting also allows us to identify cross-effects, along different dimensions, between types of panels and characteristics of the applicants. As shown in columns 2 and 3, the positive effect of the affiliation to a Russell group university, identified in the previous section, is significant for the bottom panels but not for the top panel. As shown in Column 5, the main effect of the Russell group (i.e., for the bottom panels) is significant, whereas the interaction effect (difference of the top panel relative to the others) point to the other direction, albeit it is not significant. These results suggest that lower-quality panels may provide more importance to coarser measures of quality such as institutional affiliation rather than actual research quality.

Columns 2 and 3 of Table 5 illustrate that the results are similar if we use the PI to construct the applicant measures instead of using the whole team. They show again that the quality of research of the applicant is more important for panels of the highest quality than for those of relatively lower quality (the p-value of the difference in Fisher's permutation test is 0.089). Thus, the reference (average) effects of the quality of the applicant, and displayed again in Column 1, are mainly driven by the panels of top quality.

[Insert Table 5 here]

Finally, unreported regressions show that the differences between the top quartile and the bottom three quartiles are stronger than those of the top and bottom two (or above and below the median), both when using the characteristics of the PI or the whole applicant team. This means that the differences, in terms of quality, are relevant at the top of the distribution of the panel.

4.2 Applied vs. basic panels

Table 6 distinguishes between "applied" and "non-applied" or basic panels, defined as those above and below, respectively, of the median level of average appliedness of the panels.[10] As a reference, we keep again the results of the "average effect" regression of the previous section, reporting its marginal effects in column 1 (i.e., the same as column 4 of Table 3) and the coefficients in column 4.

[Insert Table 6 here]

Columns 2 and 3 show that the degree of appliedness of the team of applicants decreases the chances of success only if a non-applied panel evaluates them. In terms of magnitudes, a one standard deviation increase in the applicants' applied orientation decreases the probability of success by 2.6% (0.312*0.083=0.026) or 8.7% of the unconditional probability if evaluated by a basic panel (0.025/0.299=0.087) whereas it is decreased by just 0.3% or 1.0% of the unconditional probability of success if evaluated by an applied panel. The empirical p-value of the difference between the coefficients of the two groups is significant, 0.018 according to Fisher's permutation test. Thus, the reference (average) effects of the type of research of the applicants, discussed in Section 3, and displayed again in Column 1, are driven by the non-applied panels only.

Columns 5 and 6 corroborate this result using an interaction approach rather than a split-sample approach. Figure 2 provides a graphical representation of the results of Column 5. We depict the estimated probability of success for a team of an average research orientation, as well as for those at one standard deviation above and below this average. As shown before, the probability of success for a team of an average orientation is slightly larger for applied than for basic panels, but the difference is statistically insignificant. But an increase in the applicants' applied research orientation decreases the probability of success by more if they are evaluated by a basic rather than by an applied panel, i.e., the slope is steeper (downwards). In that level of the applicants' research orientation, the difference between basic and applied panels

[10] We note that more basic panel members have more citations, that is, there is a negative correlation between panels' citations and appliedness. The correlation between the dummies that we use in the previous and the current subsections is -0.2463 and significant.

is significant. If, instead of increasing, we decrease the research orientation by one standard deviation, there is a crossing in the estimated probabilities of success, and the basic panels become more benevolent than the applied panels, but the difference is still insignificant.

[Insert Figure 2 here]

Moreover, columns 4 and 5 of Table 5 show that an applied PI is less likely to get funded than a basic PI, but only if the research orientation of the evaluating panel is not applied. The difference between the coefficients of the variable *Applied Orient PI* is significant since the empirical p-value of the difference according to Fisher's permutation test is 0.086.

These results confirm that the similar-to-me hypothesis is also satisfied along the research orientation dimension. As in the case of research performance, basic researchers may consider themselves a social category. The desire to have a positive self-identity leads basic panel members to penalise applied applicants. Similarly, basic individuals may consider applied individuals less attractive. This result is akin to the result of Hamermesh and Schmidt (2003), who examine the election of Fellows of the Econometric Society based, among others, on the research area. They show that the area of specialization does affect the probability of election. As theorists are more likely to be elected than econometricians, the authors hypothesize that a potential explanation is that theorists constitute a large fraction of the electorate and are more likely to vote for candidates like themselves.

We can also identify cross-effects, along different dimensions, between types of panels and characteristics of the applicants. Columns 2 and 3 show that the positive effect of the affiliation to a Russell group university and the lower likelihood of success for female applicants are significant for the applied panels only. In contrast, the negative impact of being of a Mongoloid origin is significant for the basic panels only.

4.3 Personal characteristics of the panels

Table 7 distinguishes between "Russell" and "non-Russell" and "female" and "non-female" panels, based on the comparison of the ratio of Russell group and female members, respectively, and the median of all panels. It also distinguishes between "Mongoloid" and "non-Mongoloid" panels, based on the inclusion of at least one panel member of a Mongoloid origin. As a reference, we keep again the results of the average effects regression of Column 4 of Table 3 as column 1.

[Insert Table 7 here]

Columns 2 and 3 show that Russell panels do not favour teams of a Russell group university more than non-Russell panels do. In fact, the coefficient for non-Russell panels is slightly larger (and slightly significant). The difference between the coefficients is not significant, though (the p-value of the difference of coefficients is 0.41). This is the only dimension in which the similar-to-me hypothesis is not fully supported in our analysis. In this sense, the elite/non-elite Russell group categorization we use may be less clear for the academic researchers, than the other categorizations we use in the paper. More than half of the universities in our sample (23/39), and almost 80% of the applications, belong to the so-called Russell group. This result is also consistent with the non-significance of the coefficients of the university connections between the applicants and the panel members that we reported in columns 2-4 of Table 3. Taking together, these results suggest that, in the grant allocation process, university affiliation may not lead to a strong self-categorization.

Columns 4 and 5 show that non-female panelists tend to penalise female applicants, whereas female panels do not (the p-value of the difference of the coefficients is 0.085). This is again consistent with the similar-to-me hypothesis. It is, in fact, one of the main dimensions on which the social psychology theories focus. Gender, and in particular being female in such a male-dominated discipline as engineering and the physical sciences, may be an essential social category on which female researchers desire to have a positive self-identity.

Finally, columns 6 and 7 show that non-Mongoloid panels tend to discriminate against Mongoloid applicants more than Mongoloid panels do. However, the difference of the coefficient is not significant according to Fisher's permutation test (the p-value of the difference of coefficients is 0.36). Race is again one of the main dimensions on which the social psychology theory has focused. Failure to achieve significance may be due to the small number of researchers of a Mongoloid origin.

We can also identify cross-effects, along different dimensions, between types of panels and characteristics of the applicants. Female panels, for instance, care mainly about the quality of the team, whereas the non-female panels, as the average results, also take into account the applied orientation, the affiliation to a Russell group university, and the Mongoloid origin.

Let us stress that untabulated regressions confirm the previous results when we use variables that reflect the PI's personal characteristics instead of the team's. First, the likelihood that a PI from the Russell group obtains a grant is similar whether the panel has more members from the Russell group or not. Second, female PIs find it more difficult to get a grant only when non-female panels evaluate them. Finally, the likelihood that a PI is awarded a grant is lower when s/he is of Mongoloid origin only when the evaluating panel has no member of Mongoloid origin. As it happens when we consider the team characteristics, the difference of the coefficients for the characteristics of the PIs is significant for *Gender PI* (the p-value is 0.055), but it is not significant for *Mongol PI* (the p-value is 0.236).

5 Conclusion

Most research financing programmes rely on panel evaluation systems to select the most promising and meritorious applications. In this process, the panel composition is not neutral. Even if the panel's composition is adequate in terms of knowledge and expertise, its decision may be influenced by its members' views and preferences. In this paper, we have investigated how the characteristics of the panels affect the chances of obtaining funding by different types of applicants. Our main question is whether the similarity, that is, the resemblance between the applicants and the panel, affects the chances that a project is funded.

We have shown that the likelihood that an application obtains funding depends not only on the applicants' traits but also on the composition of the evaluating panel. In particular, high-performing panels, female panelists, and panelists of Mongoloid origin are tougher. More importantly, panelists with a very strong publication record give more weight to the applicants' publication history (and less to other characteristics) than panelists with a weaker record. Also, an application is more likely to be successful if the applicants and the team members are "similar" in terms of research orientation as well as in gender and (Mongoloid) origin. We find thus that there are "similar-to-me" effects in the grant selection process, whereby applicants will be rated more favorably the more similar they are to the rater.

Our analysis suggests that some types of panels are biased since a team's odds of being funded are different depending on the panel's characteristics.[11] Indeed, take for instance research orientation. Provided that it is a horizontal characteristic, it should not influence the likelihood of obtaining funding. In this case, our results suggest that applied panels are not biased, whereas basic panels are. In contrast, if research orientation is not a horizontal characteristic and applied teams have a lower productivity ex-post, then applied panels are biased, whereas basic panels are not. Our analysis cannot assess whether we are in the first or the second case, that is, whether it is the basic or the applied panels that are biased.

Obtaining clear conclusions about the characteristics of the panels that lead to "fair" decisions requires further analysis (and data). We could argue that specific characteristics, other

[11] Previous papers indicated that public research and innovation agencies are biased against diverse topics or teams (Langfeldt, 2006, Laudel, 2006, and Banal-Estañol et al., 2019a) or novel projects (Boudreau et al., 2016).

than quality, for instance, research orientation, gender, or race, should not influence the probability of success (as Hamermesh and Schmidt, 2003, do). But that would be equivalent to assuming that they are (truly) horizontal characteristics. As an alternative approach, we could compare the drivers of success in the ex-ante evaluation and award process to the drivers of success in ex-post performance (as Banal-Estañol et al., 2019a, do). Further research on this topic requires access to additional information. Of particular interest would be knowing not only the identity of the applicants and panel members but also the details of the evaluation: ranking, grades, and eventually comments on the strong and weak points of the applications. These details of the evaluation and the deliberation are usually confidential.

Our paper points out the importance of the selection of the panel members. Their academic and personal characteristics have a strong influence on the award decisions. For instance, panel members with a basic orientation may penalise applied research. Similarly, male-dominated panels may penalise female applicants. Therefore the selection process may need to assemble a panel that collectively possesses not only sufficient knowledge and expertise but also enough diversity both in terms of research-related and demographic characteristics.

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Table 1: **List of variables**

Name of the variable	Definition of the variable
Award	dummy equal to 1 if the application is awarded
Applicant's characteristics	
Acad Quality app	annual normalized citations of papers published by the applicants divided by 10
Applied Orient app	ratio # of papers category 1 / # of papers all categories of papers published by the applicants
Russell Gr app	dummy equal to 1 if the host institution of the proposal is a uni in the Russell group
Ratio Female app	ratio # of women in the team/ # of total researchers in the team
Mongol app	dummy equal to 1 if there is a Mongoloid in the team
Panel's characteristics	
Acad Quality pan	annual normalized citations of papers published by the panelists divided by 10
Applied Orient pan	ratio # of papers category 1 / # of papers all categories of the papers published by the panelists
Russell Gr pan	dummy equal to 1 if the panel has a % of Russell members Group larger than the median panel
Ratio Female pan	ratio # of women in the panel/ # of total researchers in the panel
Mongol pan	dummy equal to 1 if there is at least one Mongoloid member in the panel
Cross variables	
Experience as Panelist	dummy equal to 1 if an applicant in the team has experience as panelist before the application
Connection as Colleague	dummy equal to 1 if there is a member in team and a panel member from the same uni
Connection as Pre-doc	dummy equal to 1 if there is a team member who did the phd in a panel member's uni
Controls	
Size Team app	sum of the # of coinvestigators and the PI in the team of the project
Size Team app sq	"Size Team app" squared
Size pan	sum of the # of members in the panel
Size pan sq	"Size pan" squared
Duration	duration of the project (in years)
Funds per cap	ratio of requested funding / # of members of the team (in millions)
Fraction Awarded	fraction of money awarded within a given quarter
Types of panels	
Top pan	dummy equal to 1 if panel's citation in first quartile of the distribution of "Acad Quality pan"
Applied pan	dummy equal to 1 if panel's applied orientation above the median panel
Russell Gr pan	dummy equal to 1 if the panel has a % of Russell Group members larger than the median panel
Female pan	dummy equal to 1 if the ratio of women in a panel above the median panel
Mongol pan	dummy equal to 1 if there is at least one Mongoloid member in the panel

Table 2: **Descriptive statistics**

Dependent variable	Observations	Mean	Std. Dev.	Median
Award	7189	0.299	0.458	0
Team's characteristics	Observations	Mean	Std. Dev.	Median
Acad Quality app	7189	0.721	1.250	0.323
Applied Orient app	7189	0.243	0.312	0.100
Russell Gr app	7189	0.795	0.404	1
Ratio Female app	7189	0.064	0.195	0
Mongol app	7189	0.132	0.339	0
Panel's characteristics	Observations	Mean	Std. Dev.	Median
Acad Quality pan	7189	3.370	2.600	2.731
Applied Orient pan	7189	0.200	0.210	0.133
Russell Gr pan	7189	0.461	0.499	0
Ratio Female pan	7189	0.113	0.104	0.111
Mongol pan	7189	0.188	0.391	0
Cross variables	Observations	Mean	Std. Dev.	Median
Experience as Panelist	7189	0.319	0.466	0
Connection as Colleague	7189	0.233	0.423	0
Connection as Pre-doc	7189	0.256	0.434	0
Control variables	Observations	Mean	Std. Dev.	Median
Size Team app	7189	2.481	1.570	2
Size pan	7189	9.744	3.307	10
Duration	7189	2.848	0.867	3
Funds per cap	7189	0.136	0.229	0.095
Fraction Awarded	7189	0.314	0.081	0.306
Types of panels	Observations	Mean	Std. Dev.	Median
Top pan	7189	0.253	0.435	0
Applied pan	7189	0.505	0.500	1
Russell Gr pan	7189	0.461	0.499	0
Female pan	7189	0.504	0.500	1
Mongol pan	7189	0.188	0.391	0

Table 3: **Average effects.**

	Initial	*Experience*	*Connections*	*Average effect*	*PI Average effect*	*Panel FE*
	(1)	(2)	(3)	(4)	(5)	(6)
APPLICANTS						
Acad Quality app/PI	0.017***	0.016***	0.017***	0.015***	0.028***	0.021***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.008]	[0.006]
Applied Orient app/PI	-0.036*	-0.035*	-0.036*	-0.036*	-0.024	-0.054**
	[0.019]	[0.019]	[0.019]	[0.019]	[0.018]	[0.021]
Russell Gr app	0.032**	0.031**	0.031**	0.030**	0.026*	0.044***
	[0.013]	[0.013]	[0.014]	[0.014]	[0.014]	[0.015]
Ratio Female app/Gender PI	-0.040	-0.046*	-0.040	-0.046*	-0.047**	-0.024
	[0.027]	[0.028]	[0.027]	[0.028]	[0.022]	[0.031]
Mongol app/Mongol PI	-0.043***	-0.040**	-0.043***	-0.040**	-0.065***	-0.030*
	[0.016]	[0.016]	[0.016]	[0.016]	[0.023]	[0.018]
PANELS						
Acad Quality pan	-0.010***	-0.010***	-0.010***	-0.010***	-0.009***	
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	
Applied Orient pan	0.007	0.007	0.007	0.007	0.015	
	[0.028]	[0.028]	[0.028]	[0.028]	[0.030]	
Russell Gr pan	0.008	0.007	0.008	0.007	0.002	
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	
Ratio Female pan	-0.166***	-0.162***	-0.166***	-0.161***	-0.173***	
	[0.052]	[0.052]	[0.052]	[0.052]	[0.054]	
Mongol pan	-0.030**	-0.030**	-0.030**	-0.030**	-0.029**	
	[0.014]	[0.014]	[0.014]	[0.014]	[0.015]	
CROSS VARIABLES						
Experience as Panelist		0.038***		0.038***	0.044***	0.069***
		[0.012]		[0.012]	[0.014]	[0.014]
Connection as Colleague			0.008	0.008	0.007	0.004
			[0.013]	[0.013]	[0.014]	[0.015]
Connection as Pre-doc			0.004	0.003	0.003	0.003
			[0.013]	[0.013]	[0.014]	[0.015]
CONTROLS						
Size Team app	-0.045***	-0.049***	-0.045***	-0.049***	-0.042***	-0.036***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.012]
Size Team app sq	0.004***	0.004***	0.004***	0.004***	0.004***	0.003*
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]
Size pan	-0.006	-0.006	-0.006	-0.006	-0.004	
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	
Size pan sq	-0.000	-0.000	-0.000	-0.000	-0.000	
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	
Duration	0.032***	0.032***	0.031***	0.031***	0.032***	0.041***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.010]
Funds per cap	-0.311***	-0.312***	-0.311***	-0.311***	-0.318***	0.009
	[0.062]	[0.062]	[0.062]	[0.062]	[0.065]	[0.034]
Fraction Awarded	0.457***	0.455***	0.457***	0.454***	0.447***	0.110
	[0.081]	[0.081]	[0.081]	[0.081]	[0.085]	[0.091]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	-
Panel fixed effects	-	-	-	-	-	Yes
Observations	7,189	7,189	7,189	7,189	6,637	6,116

Notes. This table reports marginal effects from probit regressions for the likelihood that a project is awarded. The dependent variable *Award* is a dummy equal to 1 if the project is awarded and 0 otherwise. Independent variables are characteristics of the team of applicants and the evaluation panel, and controls. All variables are defined in Table 1. Column (2) includes *Experience as Panelist*, which is a dummy equal to 1 if an applicant has experience as member of panels and 0 otherwise. Column (3) includes the variables *Connection as Colleague* and *Connection as Pre-doc*, which are dummies equal to 1 if some applicant has the same affiliation or has defended the Ph.D., respectively, at the same department as some panel member and 0 otherwise. Column (4) includes all the previous variables. Column (5) replicates column (4) using the variables corresponding to the PI instead of the team. In these regressions, we include year fixed effects. Column (6) replicates column (4) without the panel variables and with panel fixed effects. Robust standard errors are reported in parentheses.
$***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Table 4: **Research quality of the panel members.**

	Average effect	*Top pan*	*non-Top pan*	*Average effect*	*Interaction all*	*Interaction Quality*
	(1)	(2)	(3)	(4)	(5)	(6)
APPLICANTS						
Acad Quality app	0.015***	0.026***	0.010*	0.046***	0.026	0.025
	[0.005]	[0.008]	[0.006]	[0.014]	[0.016]	[0.016]
Applied Orient app	-0.036*	-0.068	-0.040*	-0.106*	-0.093	-0.101*
	[0.019]	[0.046]	[0.021]	[0.055]	[0.060]	[0.055]
Russell Gr app	0.030**	0.020	0.033**	0.088**	0.092**	0.090**
	[0.014]	[0.028]	[0.015]	[0.040]	[0.045]	[0.040]
Ratio Female app	-0.046*	-0.033	-0.042	-0.136*	-0.135	-0.140*
	[0.028]	[0.047]	[0.034]	[0.082]	[0.099]	[0.082]
Mongol app	-0.040**	-0.036	-0.043**	-0.120**	-0.124**	-0.120**
	[0.016]	[0.031]	[0.019]	[0.048]	[0.055]	[0.048]
INTERACTIONS						
Top pan×Acad Quality app					0.052*	0.054*
					[0.029]	[0.028]
Top pan×Applied Orient app					-0.051	
					[0.150]	
Top pan×Russell Gr app					-0.008	
					[0.097]	
Top pan×Ratio Female app					-0.020	
					[0.176]	
Top pan × Mongol app					0.018	
					[0.111]	
PANELS						
Acad Quality pan	-0.010***	-0.007	-0.028***	-0.029***		
	[0.003]	[0.005]	[0.007]	[0.008]		
Applied Orient pan	0.007	0.073	-0.016	0.022	0.064	0.064
	[0.028]	[0.086]	[0.031]	[0.084]	[0.082]	[0.082]
Russell Gr pan	0.007	0.014	0.001	0.022	0.016	0.016
	[0.011]	[0.023]	[0.013]	[0.033]	[0.033]	[0.033]
Ratio Female pan	-0.161***	-0.134	-0.173***	-0.480***	-0.454***	-0.455***
	[0.052]	[0.109]	[0.060]	[0.155]	[0.156]	[0.156]
Mongol pan	-0.030**	-0.050*	-0.009	-0.090**	-0.082*	-0.083**
	[0.014]	[0.029]	[0.017]	[0.042]	[0.042]	[0.042]
Top pan					-0.107	-0.123**
					[0.097]	[0.048]
CROSS VARIABLES						
Experience as Panelist	0.038***	0.040*	0.038***	0.113***	0.113***	0.113***
	[0.012]	[0.023]	[0.015]	[0.037]	[0.037]	[0.037]
Connection as Colleague	0.008	0.004	0.011	0.025	0.023	0.023
	[0.013]	[0.024]	[0.016]	[0.040]	[0.040]	[0.040]
Connection as Pre-doc	0.003	0.016	-0.005	0.008	0.008	0.008
	[0.013]	[0.024]	[0.016]	[0.039]	[0.039]	[0.039]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,189	1,820	5,369	7,189	7,189	7,189

Notes. This table presents the results of probit regressions for the likelihood that a project is awarded. The dependent variable *Award* is a dummy equal to 1 if the project is awarded and 0 otherwise. Independent variables are characteristics of the team of applicants, characteristics of the evaluation panel, and some controls. All variables are defined in Table 1. Columns (2) and (3) replicate column (1) for the subset of projects evaluated for panels in the first quartile and in the other quartiles, respectively, in terms of average number of citations of the panels. Columns (1) to (3) report marginal effects. Column (4) reports the coefficients from the same regression as column (1). Column (5) includes the interaction of the five applicants' characteristics with a dummy equal to 1 if the panel is in the first quartile in terms of average citations and 0 otherwise. Column (6) only includes the interaction with the quality of the applicants. In all regressions, we include year fixed effects. Robust standard errors are reported in parentheses.
$***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Table 5: **Research related measures of the panel members and PI characteristics.**

	PI Average effect	*Top pan*	*non-Top pan*	*Applied pan*	*non-Applied pan*
	(1)	(2)	(3)	(4)	(5)
PRINCIPAL INVESTIGATORS					
Acad Quality PI	0.028***	0.045***	0.021**	0.007	0.034***
	[0.008]	[0.014]	[0.010]	[0.017]	[0.010]
Applied Orient PI	-0.024	-0.048	-0.028	-0.012	-0.061*
	[0.018]	[0.044]	[0.020]	[0.023]	[0.032]
Russell Gr app	0.026*	0.016	0.029*	0.044**	0.007
	[0.014]	[0.030]	[0.016]	[0.020]	[0.021]
Gender PI	-0.047**	-0.061	-0.035	-0.053	-0.041
	[0.022]	[0.040]	[0.026]	[0.033]	[0.029]
Mongol PI	-0.065***	-0.062	-0.067**	-0.061**	-0.064*
	[0.023]	[0.045]	[0.027]	[0.031]	[0.033]
PANELS					
Acad Quality pan	-0.009***	-0.007	-0.024***	-0.000	-0.015***
	[0.003]	[0.005]	[0.007]	[0.005]	[0.004]
Applied Orient pan	0.015	0.083	-0.005	-0.004	0.246
	[0.030]	[0.089]	[0.032]	[0.045]	[0.190]
Russell Gr pan	0.002	0.014	-0.004	0.023	-0.011
	[0.011]	[0.024]	[0.013]	[0.016]	[0.016]
Ratio Female pan	-0.173***	-0.108	-0.188***	-0.112	-0.259***
	[0.054]	[0.114]	[0.063]	[0.078]	[0.077]
Mongol pan	-0.029**	-0.051*	-0.008	-0.008	-0.053**
	[0.015]	[0.030]	[0.017]	[0.021]	[0.021]
CROSS VARIABLES					
Experience as panelist	0.044***	0.049*	0.043***	0.049**	0.043**
	[0.014]	[0.025]	[0.017]	[0.021]	[0.019]
Connection as Colleague	0.007	-0.008	0.015	0.015	-0.002
	[0.014]	[0.025]	[0.017]	[0.021]	[0.019]
Connection as Pre-doc	0.003	0.021	-0.007	0.024	-0.018
	[0.014]	[0.025]	[0.016]	[0.020]	[0.019]
Control variables	Yes	Yes	Yes	Yes	Yes
Year Fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	6,637	1,701	4,936	3,325	3,312

Notes. This table reports marginal effects from probit regressions for the likelihood that a project is awarded. The dependent variable *Award* is a dummy equal to 1 if the project is awarded and 0 otherwise. Independent variables are characteristics of the PI and the evaluation panel, cross variables, and controls. All variables are defined in Table 1. Columns (2) and (3) replicate column (1) for the subset of projects evaluated for panels in the first quartile and in the other quartiles, respectively, in terms of average number of citations of the panels. Columns (4) and (5) replicate column (1) for the subset of projects evaluated for panels above and below the median, respectively, in terms of appliedness of the panel members. In all regressions, we include year fixed effects. Robust standard errors are reported in parentheses.
$***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Table 6: **Applied orientation of the panel.**

	Average effect	*Applied pan*	*non-Applied pan*	*Average effect*	*Interaction all*	*Interaction Orient*
	(1)	(2)	(3)	(4)	(5)	(6)
APPLICANTS						
Acad Quality app	0.015***	0.020**	0.016***	0.046***	0.034**	0.045***
	[0.005]	[0.010]	[0.005]	[0.014]	[0.015]	[0.014]
Applied Orient app	-0.036*	-0.011	-0.083**	-0.106*	-0.247**	-0.233**
	[0.019]	[0.023]	[0.033]	[0.055]	[0.099]	[0.099]
Russell Gr app	0.030**	0.051***	0.004	0.088**	0.003	0.088**
	[0.014]	[0.019]	[0.020]	[0.040]	[0.059]	[0.040]
Ratio Female app	-0.046*	-0.073*	-0.024	-0.136*	-0.071	-0.132
	[0.028]	[0.042]	[0.036]	[0.082]	[0.109]	[0.082]
Mongol app	-0.040**	-0.036	-0.045**	-0.120**	-0.158**	-0.120**
	[0.016]	[0.022]	[0.023]	[0.048]	[0.069]	[0.048]
INTERACTIONS						
Applied pan×Acad Quality app					0.055*	
					[0.032]	
Applied pan×Applied Orient app					0.213*	0.175
					[0.119]	[0.117]
Applied pan×Russell Gr app					0.155*	
					[0.080]	
Applied pan×Ratio Female app					-0.138	
					[0.165]	
Applied pan×Mongol app					0.077	
					[0.095]	
PANELS						
Acad Quality pan	-0.010***	-0.003	-0.015***	-0.029***	-0.029***	-0.028***
	[0.003]	[0.005]	[0.004]	[0.008]	[0.008]	[0.008]
Applied Orient pan	0.007	0.003	0.197	0.022		
	[0.028]	[0.042]	[0.182]	[0.084]		
Russell Gr pan	0.007	0.026*	-0.006	0.022	0.024	0.023
	[0.011]	[0.016]	[0.016]	[0.033]	[0.033]	[0.033]
Ratio Female pan	-0.161***	-0.119	-0.222***	-0.480***	-0.486***	-0.468***
	[0.052]	[0.074]	[0.074]	[0.155]	[0.156]	[0.155]
Mongol pan	-0.030**	-0.014	-0.051**	-0.090**	-0.091**	-0.090**
	[0.014]	[0.020]	[0.020]	[0.042]	[0.042]	[0.042]
Applied pan					-0.182**	-0.012
					[0.080]	[0.042]
CROSS VARIABLES						
Experience as Panelist	0.038***	0.043**	0.031*	0.113***	0.109***	0.113***
	[0.012]	[0.018]	[0.017]	[0.037]	[0.037]	[0.037]
Connection as Colleague	0.008	0.007	0.005	0.025	0.025	0.024
	[0.013]	[0.020]	[0.019]	[0.040]	[0.040]	[0.040]
Connection as Pre-doc	0.003	0.027	-0.021	0.008	0.008	0.009
	[0.013]	[0.019]	[0.018]	[0.039]	[0.039]	[0.039]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,189	3,631	3,558	7,189	7,189	7,189

Notes. This table presents the results of probit regressions for the likelihood that a project is awarded. The dependent variable *Award* is a dummy equal to 1 if the project is awarded and 0 otherwise. Independent variables are characteristics of the team of applicants and the evaluation panel, cross variables, and controls. All variables are defined in Table 1. Columns (2) and (3) replicate column (1) for the subset of projects evaluated for panels above and below the median, respectively, in terms appliedness of the panel members. Columns (1) to (3) report marginal effects. Column (4) reports the coefficients from the same regression as column (1). Column (5) includes the interaction of the five applicants' characteristics with a dummy equal to 1 if the panel is above median in terms of appliedness and 0 otherwise. Column (6) only includes the interaction with the applied orientation of the applicants. In all regressions, we include year fixed effects. Robust standard errors are reported in parentheses.

$***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

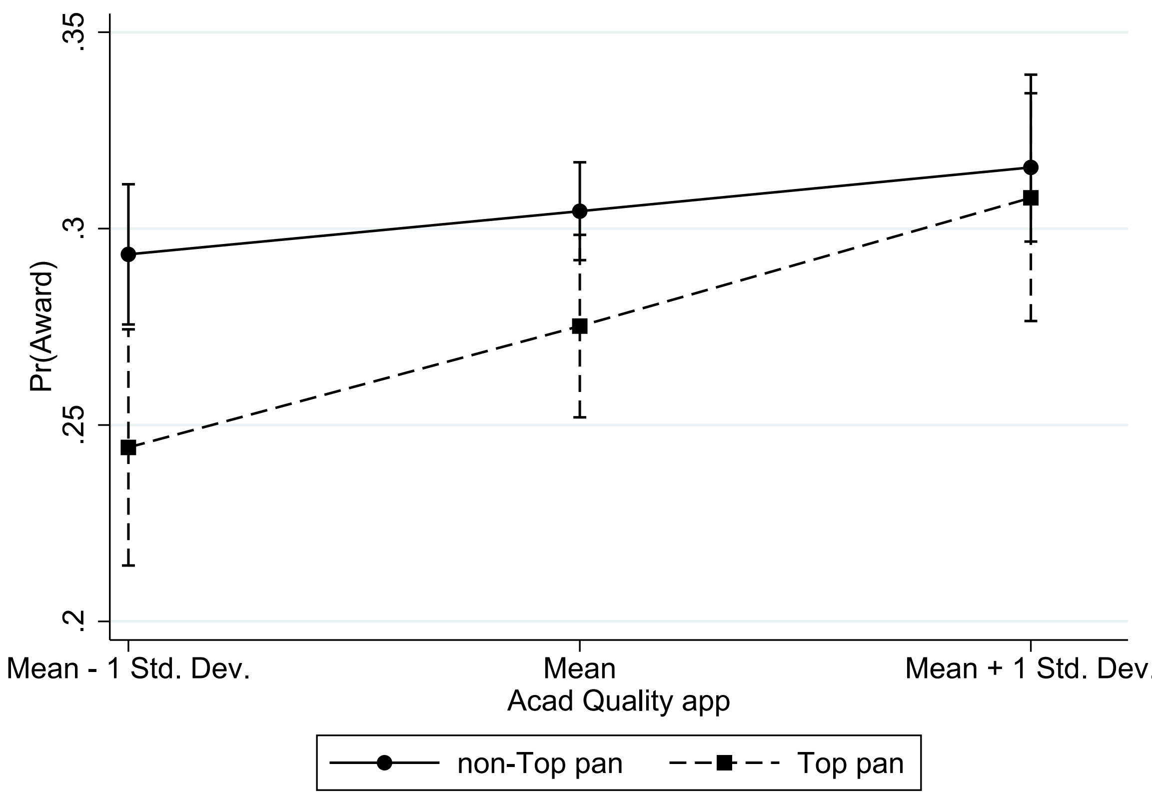
Table 7: **Personal characteristics of the panel.**

	Average effect	*Russell Gr pan*	*non-Russell Gr pan*	*Female pan*	*non-Female pan*	*Mongol pan*	*non-Mongol pan*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
APPLICANTS							
Acad Quality app	0.015***	0.011*	0.021***	0.020***	0.011*	0.025**	0.014***
	[0.005]	[0.006]	[0.007]	[0.007]	[0.006]	[0.012]	[0.005]
Applied Orient app	-0.036*	-0.029	-0.050**	-0.025	-0.050*	0.002	-0.045**
	[0.019]	[0.028]	[0.025]	[0.025]	[0.027]	[0.044]	[0.021]
Russell Gr app	0.030**	0.030	0.034*	0.024	0.032	0.015	0.033**
	[0.014]	[0.021]	[0.018]	[0.019]	[0.019]	[0.030]	[0.015]
Ratio Female app	-0.046*	-0.051	-0.034	-0.015	-0.091**	-0.090	-0.039
	[0.028]	[0.041]	[0.037]	[0.036]	[0.042]	[0.065]	[0.030]
Mongol app	-0.040**	-0.050**	-0.033	-0.018	-0.058**	-0.028	-0.044**
	[0.016]	[0.024]	[0.021]	[0.022]	[0.023]	[0.032]	[0.019]
PANELS							
Acad Quality pan	-0.010***	-0.009**	-0.008*	-0.002	-0.015***	-0.020***	-0.008***
	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]	[0.007]	[0.003]
Applied Orient pan	0.007	0.051	0.002	0.049	-0.022	0.043	-0.001
	[0.028]	[0.044]	[0.037]	[0.040]	[0.040]	[0.073]	[0.031]
Russell Gr pan	0.007			-0.002	0.014	0.039	-0.001
	[0.011]			[0.016]	[0.016]	[0.025]	[0.012]
Ratio Female pan	-0.161***	-0.265***	-0.064	-0.210**	-0.463**	-0.172	-0.166***
	[0.052]	[0.071]	[0.077]	[0.099]	[0.199]	[0.134]	[0.057]
Mongol pan	-0.030**	-0.002	-0.055***	-0.030	-0.033		
	[0.014]	[0.021]	[0.019]	[0.019]	[0.021]		
CROSS VARIABLES							
Experience as Panelist	0.038***	0.046***	0.033**	-0.001	0.076***	0.010	0.045***
	[0.012]	[0.018]	[0.017]	[0.017]	[0.017]	[0.026]	[0.014]
Connection as Colleague	0.008	0.006	0.005	0.001	0.011	0.068**	-0.007
	[0.013]	[0.020]	[0.018]	[0.019]	[0.019]	[0.028]	[0.015]
Connection as Pre-doc	0.003	-0.009	0.010	0.002	-0.000	-0.027	0.011
	[0.013]	[0.019]	[0.018]	[0.019]	[0.019]	[0.029]	[0.015]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,189	3,314	3,875	3,626	3,563	1,352	5,837

Notes. This table reports marginal effects from probit regressions for the likelihood that a project is awarded. The dependent variable *Award* is a dummy equal to 1 if the project is awarded and 0 otherwise. Independent variables are characteristics of the team of applicants and the evaluation panel, cross variables, and controls. All variables are defined in Table 1. Columns (2) and (3) replicate column (1) for the subset of projects evaluated for panels above and below the median, respectively, in terms rate of female among the panel members. Columns (4) and (5) replicate column (1) for the subset of projects evaluated for panels with and without, respectively, panel members of Mongoloid origin. Columns (6) and (7) replicate column (1) for the subset of projects evaluated for panels above and below the median, respectively, in terms rate of members of the panel affiliated to a university in the Russell group. In all regressions, we include year fixed effects. Robust standard errors are reported in parentheses.

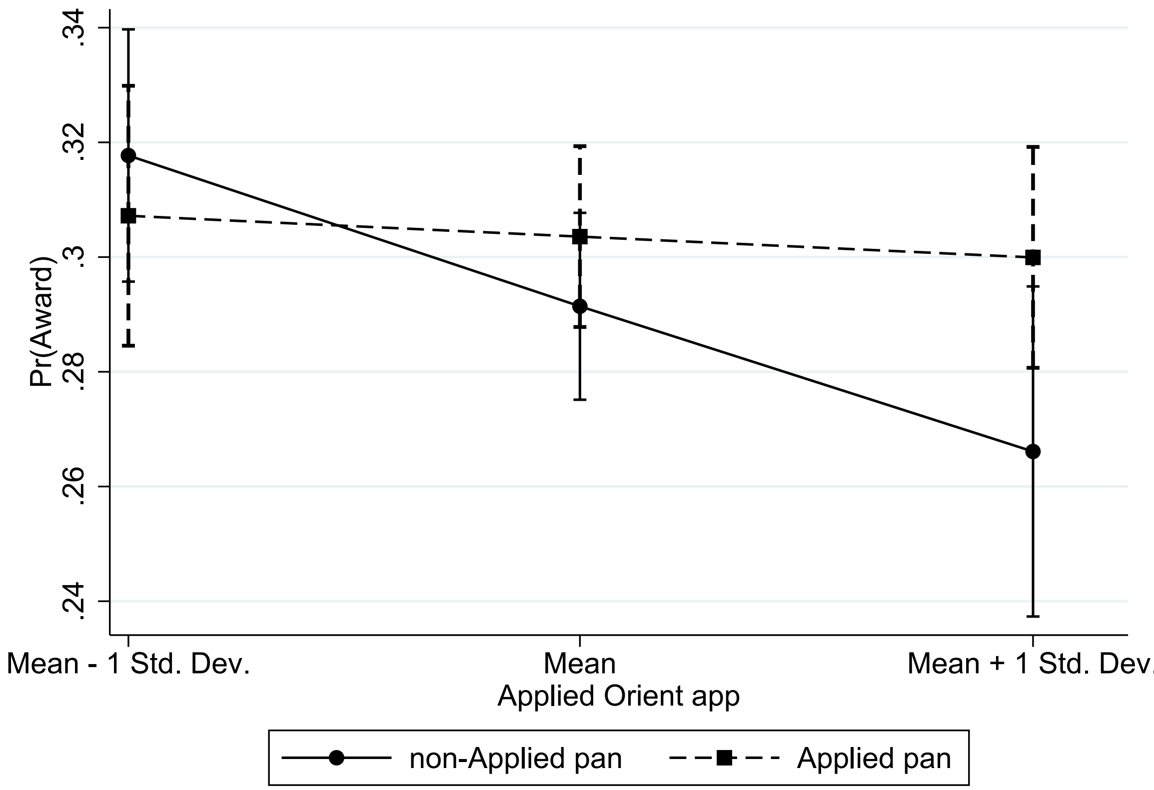
$***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Figure 1: **Marginal effects of academic quality of interaction term**



Notes. The solid (dashed) line represents the likelihood of obtaining a grant for a team whose academic quality is one standard deviation below the mean, the mean, and one standard deviation above the mean, when evaluated by non-top (top) panels with 95% confidence intervals. The dashed line is below the solid line, but it is steeper, showing that top panels are more demanding than non-top panels, and they care more about the applicant team's research performance.

Figure 2: **Marginal effects of applied orientation for interaction term**



Notes. The solid (dashed) line represents the likelihood of obtaining a grant for a team whose applied orientation is one standard deviation below the mean, the mean, and one standard deviation above the mean, when evaluated by non-applied (applied) panels with 95% confidence intervals. The non-applied panel's line is steeper, showing that an increase in the research orientation (i.e., a more applied team) reduces a team's probability of success more when non-applied panels evaluate them than when applied panels do.