# Before Peer Review: Men Request More Funding Sizes Than Women in Grant Applications

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Science funding is the key to a sustainable innovation system. Yet, prior research documents a systematic gender gap in funding amounts, which may emerge at the evaluation or application stage. Here, we study the latter mechanism by examining the funding amount requested by principal investigators (PI). Using a nationally representative sample from the Novo Nordisk Foundation covering 13,520 grant applications submitted between 2015 and 2022, we find that men PI request 25% more total budget than women PI. This gender difference is robust to stringent controls for PI's past experience, content novelty, linguistic features, and important fixed-effect factors. Furthermore, the gender gap persists when comparing applicants matched on observable confounding variables. Through mediation analysis, we identify three key mechanisms, including differences in presentation style, novelty preference, and research experience, which collectively explain 24% of the gender gap in funding requests. Importantly, we find that gender differences in requested amounts largely contribute to the gender gap in funded amounts. Our findings highlight the importance of understanding endogenous human behaviors in generating measurable gender inequality in funding outcomes, which provides a starting point for future work to dissect the origins of gender differences in formulating grant applications.

**Data.** Our analysis is based on administrative data from the Novo Nordisk Foundation (NNF), covering sample of 13,520 funded and unfunded grant applications submitted between 2015 and 2022. The dataset contains metadata on requested and funded amounts, application year, research area, funding type, and full-text project descriptions, enabling us to measure linguistic and content-related characteristics of proposals. A key advantage of the data is the inclusion of self-reported PI gender and age group, together with bibliometric records linked through the OpenAlex database, which allows us to capture prior research productivity, citation impact, and grant experience at the time of proposal submission.

**Methods.** We use a series of fixed-effect regression models to examine gender differences in requested funding amounts at the application stage. Our models account for applicant career stage, funding program structures, prior research productivity, proposal novelty, and linguistic characteristics derived from proposal text. We further assess the robustness of our findings using propensity score matching and mediation analysis frameworks.

**Findings.** The gender gap in requested funding amounts persists even among closely matched applicants with comparable proposal characteristics, publication records, and grant experience (Fig. 1). Men consistently request larger funding amounts than comparable women across multiple measures, suggesting that the disparity cannot be fully explained by observable differences in applicant profiles.

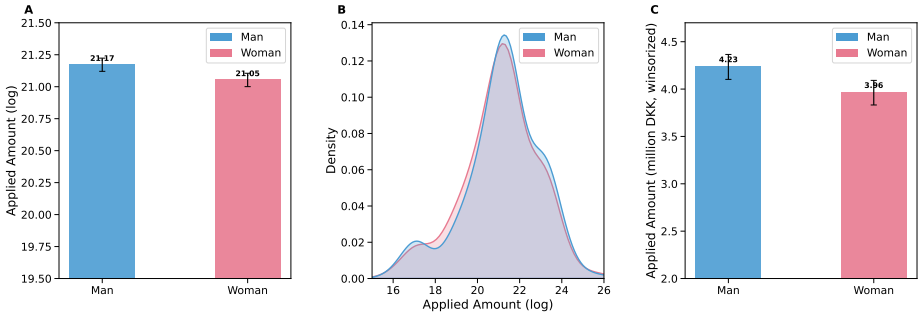


**Fig. 1.** Gender differences in requested funding amounts persist among closely matched applicants.(A) Men request a 0.12 log-point higher average applied amount than comparable women ($p < 0.001$). (B) The distribution of log applied amounts for men is statistically shifted toward higher values than women based on a Mann–Whitney U test ($p < 0.001$). (C) Men request 6.8% more funding than comparable women in winsorized raw applied amounts ($p = 0.004$). Error bars and shaded areas indicate 95% confidence intervals.

Mediation analysis further identifies three behavioral and career-related pathways underlying the gender gap in requested amounts. Differences in promotional language, proposal novelty, and prior publication records collectively explain 24% of the observed gender disparity in funding requests. We further find that requested funding amounts strongly predict funded amounts. Once the applied amount is included in the model, the direct association between gender and funded amount becomes statistically non-significant, suggesting that funding inequalities may partly emerge during the application stage before external evaluation takes place.

**Impact and Implications.** Our findings provide an endogenous perspective on gender inequality in science funding by suggesting that disparities may already emerge during the construction of grant proposals, before external evaluation takes place. By linking requested funding amounts to linguistic presentation, novelty preference, and prior research experience, our study highlights the role of applicant-side behaviors in shaping downstream funding outcomes.

These findings have important implications for understanding how scientific resources are allocated and evaluated. More broadly, our work demonstrates how computational approaches integrating administrative records, bibliometric indicators, and large-scale text analysis can help uncover behavioral mechanisms underlying inequality in scientific resource allocation.