Postdocs & Gender: What Do We Know?

Data from the Sigma Xi Postdoctoral Survey

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Survey Summary

47 institutions
7966 individuals
69% academic

68% life sciences
10% physical sciences
4% eng & comp sciences
3% arts, humanities & social sciences
1% math and economics

56% male
29% with children
58% with partner

http://postdoc.sigmaxi.org/
Survey Findings

Focus on success, advisor relations, conflict and publications as response variables

Males have higher levels of subjective success

Males have higher rates of publication submission

Females submit more grants

Effects of family status on publications

No effects of gender or family status on advisor relations

http://postdoc.sigmaxi.org/
Data Treatment

Postdocs only
Age filter (erroneous entries removed)
Gender known
Marital status known
Family status known

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>No Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Partnered</td>
<td>Single</td>
</tr>
<tr>
<td>Male</td>
<td>1295 (36%)</td>
<td>42 (1%)</td>
</tr>
<tr>
<td>Female</td>
<td>709 (26%)</td>
<td>52 (2%)</td>
</tr>
</tbody>
</table>

$\chi^2 = 72.19$ $p < 0.001$
# A Note on Discipline

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biosciences</td>
<td>47%</td>
<td>4796</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>24%</td>
<td>666</td>
</tr>
<tr>
<td>Engineering and Computer Science</td>
<td>16%</td>
<td>233</td>
</tr>
<tr>
<td>Art, Humanities and Social Science</td>
<td>64%</td>
<td>172</td>
</tr>
<tr>
<td>Math and Economics</td>
<td>24%</td>
<td>37</td>
</tr>
</tbody>
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Productivity: 1st AU Publications

- Males more productive than females
  \(~ 0.21 \text{ papers / yr}~

- No effect of children

- Marginal effect of partner status
  \(~ 0.06 \text{ papers / yr}~

Number / Year

Children | No Children
Productivity: All Publications

- Males more productive than females
  - ~ 0.17 papers / yr
- No effect of children
- No effect of partner status
Productivity: Grants

- Females write more grants than males
  ~ 0.12 grants / yr

- Parents write fewer grants
  ~ 0.19 grants / yr

- Single PDs write fewer grants than those with partners
  ~ 0.12 grants / yr

- Interactions between gender*children and children*partner status
Productivity: Grants

- Interaction between gender*children
  - childless females > female parents = childless males > male parents

- Interaction between children*partner status
  - childless couples = childless singles = parental couples > single parents
Productivity: Grants

Increased grant writing by parents of multiple children

Parents of young (pre-school aged) children submit more grants

No interactions with gender
Productivity: Quality & Quantity

Males and females are equally satisfied with the *quantity* of work they are producing, as are parents and non-parents, singles and partnered postdocs.

Males are slightly more likely to be dissatisfied with the *quality* of work than females.

Perception of *quality* varies as an interaction between gender and children; males equally satisfied whether or not they have children, female parents are more satisfied.
Experience: Hours Worked

- Males work longer hours ~ 2.5 hrs / wk
- Parents work fewer hours ~ 3.5 hrs / wk
- No interaction between gender and parenting
Experience: Hours Worked

Parents of pre-school children worked less hours per week

No effect of the number of children

No interactions with gender
Experience: Number of Months

- No difference between genders
- No difference by partner status
- Postdocs with children were advanced by ~8 months
Experience: Number of Months

Parents of pre-school children had been postdocs for less time

No effect of the number of children

No interactions with gender
Experience: Number of Positions

- Females held fewer previous positions
- No difference by partner status
- Parents held more positions than non parents

0123 4+ parents non parents
Experience: Number of Positions

Parents of pre-school children had held fewer previous postdoc positions than other parents.

No effect of the number of children.

No interactions with gender.
Postdoc Outcomes

No difference between genders or with respect to family status in the measures of outcome and recommended practices generated by Davis (2009)

Professional Development
Satisfaction
Quality / Advisor Relations
Conflict
Mentoring

Perceptions of mentoring by postdoc and advisor gender

- Males more likely to view their advisor as a mentor
- Significant interaction with advisor gender
  ~ male postdocs with a female advisor least likely to perceive a mentoring relationship
Summary

Publication submission (not success) varies by gender but not family status. Grant writing varies by both gender and family status.

Males work longer hours, parents work fewer hours but no interaction between gender and children (female parents don’t work exceptionally fewer hours).

Males and females equally satisfied by the amount of work they produce but males less satisfied by the quality.
Summary

Although the time as a postdoc did not vary by gender, females had held fewer positions (moved less). Parents had been postdocs longer and had held more postdoc positions.

Age but not number of children is often a factor in the postdoc experience.

Females less likely to perceive a mentoring relationship with their advisor.