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ABSTRACT

This study attempts to utilize more refined measures of rewards and productivity than have been employed in past research in an effort to determine whether differences in rewards offered to men and women exist, and if they do, whether such differences can be explained in terms of differing rates of productivity. A 10-page questionnaire was developed with 27 productivity measures, 15 reward measures, and demographic information Results showed that differentiation of rewards does exist with respect to pay. Entry level pay and current level pay were significantly less for women than men. No sex related differences were found, however, on other reward measures such as the number of graduate students taught or advised, office or telephone, research assistant time, or convention expenses, with the exception of job rank which revealed that women faculty have a lower current rank than men. Additional discussion on productivity measures is presented. (Author/PC)

SEX, PRODUCTIVITY AND REWARD IN ACADEME

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As the Women's Liberation movement has become more and more firmly entrenched in America numerous cries of discrimination against women have been heard, and many of these pertain to alleged mistreatment of women in academe. With government-funded grants and other monies to state universities suddenly becoming contingent upon "affirmative action" by those universities to correct discriminatory practices, the issue of discrimination has taken on practical as well as moral importance. In general, neither opponents nor advocates of "affirmative action" have relied very much upon substantive evidence, and in fact there has been little concensus among researchers as to whether women have in fact been systematically discriminated against and, if they have, whether such discrimination can be "justified" in terms of lower productivity by women in academe.

For example, Epstein (1970) claimed that women in predominatly male-oriented professions do not contribute as much as men, and Astin (1969) found that, with respect to professional publications, women are less productive than men. Astin also found that women Ph.D's tend to receive lower salaries and enjoy lower rank than men.

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Furthermore, census data indicate that professional women in male-oriented professions spend fewer hours on work-related activities than do their male counterparts. Specifically, females spend between 35 and 39 hours per week engaged in their work while men spend 37 - 47 hours per week so engaged. These figures include part time workers.

With regard to membership and participation in professional organizations, Bernard (1964) found that fewer female bioscientists, proportionately, were members of professional societies, and that twice as many women as men attended no professional meetings.

On the other hand, Simon, Clark and Galway (1967) found that women were fully as likely as men to become associated with professional organizations, and that their productivity was also equivalent. In fact, the married female Ph.D., with or without children, tended to be slightly more productive than her male counterpart. Similarly Bernard (1964) found that by matching male and female scientists by area of specialization, training, academic rank and length of post doctoral career, productivity (as measured by books and articles written) did not vary significantly by sex. Bernard concluded that academic position was a more valid predictor of productivity.

The lack of consensus in this area may in part be explained by the lack of agreement among researchers as to what constitutes productivity, and in part is due to the failure of many authors to match samples by academic rank, length of time in the field, etc. Rank in particular may be an important contaminating variable since it is generally agreed that women are disproportionately located toward the bottom of the academic hierachy. For example, Rossi (1970) discovered that 62% of female Ph.D.'s were at or below the rank of Assistant Professor, in contrast to only 33% of male Ph.D's. Agreeing with

Rossi, Patterson (1971) claims that not only are women less likely to attain senior rank altogether, but they must also wait at least a decade longer than men to attain a high-level position.

It appears also that departmental prestige, to the extent that it is not controlled for, may also be a strong contaminating variable. For example, Crane (1965) has shown that a strong relationship exists between such prestige and the probability of publishing and receiving recognition. Academic women are far less likely to be employed by highly prestigious universities. In 1956, for instance, 25% of women in academia were working in teacher's colleges or junior colleges, as compared to only 10% of the men. Although approximately one-third of academic women were employed by universities, more than half of these women were working in low prestige schools.

There is no way to determine from existing research whether women are associated with less prestigious schools primarily because they are less productive than men, or if the cause is instead due to discriminatory actions on the part of such schools. It is known, however, that women are often not considered to be the equal of men in intellectual endeavors (Rosenkrantz, Vogel, Bee, Broverman and Broverman, 1968), and this may result in a kind of "self-fulfilling prophecy," in that such an attitude may have a negative effect upon the opportunity of women to publish articles, obtain grants, etc. However, at least one study has found that female industrial psychologists publish journal articles at the same rate as their male counterparts (Schein, 1971). The same study found, however, that rewards distributed by their employing organizations were quite different, with the average income for men being more than $10,000 per year higher.

In general, then, the literature is replete with contradictory

findings, in part due to employment of overly-simplistic measures of rewards and productivity, and is in part due to the tendency of many authors in this emotionally-charged area to take positions which are more extreme than the data justify. Kerr (1972) has pointed out some of these difficulties, and has pointed out the need for multiple measures of productivity to determine scholarly performance. This study has attempted to utilize more refined measures of rewards and productivity than have been employed in the past in an effort to determine whether differences in rewards offered to men and women exist and, if they do, whether such differences can be explained in terms of differing rates of productivity.

The initial focus of the research was the determination of whether differentiation of rewards exists, that is, whether significant differences exist between the organizational rewards given to men and women. If differentiation of rewards was found to exist, the next question to be addressed was whether or not the reported differences in rewards were consistent with differences in productivity. If it was, then differentiation cannot really be said to be evidence of discrimination; if it was not, then discrimination ("conduct based on a distinction made on grounds of natural or social categories that have no relation to individual capacities or merits or to the behavior of the individual" -- Allport, cited by Patterson, 1971) may be said to exist, and can be quantified by examining the differences between men and women in productivity, as compared to differences in rewards.

Algebraically, we operationalized differentiation by claiming that:

1. If rewards for males (Rm) = rewards for females (Rf), then differentiation (diff) does not exist.

2. If Rm > Rf, diff exists in favor of males. To examine the possibility that discrimination exists, assuming that the data provide evidence of differentiation, it is necessary to consider productivity of both sexes (Pm and Pf). Algebraically,

3. If $\frac{Pm}{Pf} = \frac{Rm}{Rf}$, then differences in distributed rewards may be said to be consistent with differences in productivity, and discrimination (disc), at least on the "micro" level, would equal zero. However,

4. If $\frac{Pm}{Pf} < \frac{Rm}{Rf}$, then the difference indicates the extent to which discrimination exists against females.

Even if $\frac{Pm}{Pf} = \frac{Rm}{Rf}$, then the possibility remains that a "macro" kind of discrimination exists against the female academic. This is because, while it is true that differences in productivity may "justify" the fact that the employing organization is dispensing rewards unequally it may still be that discrimination against women is causing her measures of productivity to be lower than those of her male counterparts. Thus the equality of $\frac{Pm}{Pf}$ and $\frac{Rm}{Rf}$, would indicate that the individual department chairman might be allocating rewards "fairly", that is, according to faculty members' different rates of productivity, but would not rule out the possibility that others outside of the employing organization (or in some cases inside as well) were denying female academics equal access to grant monies, equal opportunities to publish, etc. It was determined that evidence of "macro" discrimination could be uncovered by formulating two different measures of productivity (Ps and Pn), which together constitute the global measure of productivity. Ps consists of those measures of productivity which are very susceptible to discrimination efforts, while Pn is comprised of those measures which are relatively less susceptible. If, for example, Ps, males > Ps, females and Pn, males > Pr,

females, then it must be said that the data reveal no evidence that lower rates of female productivity are caused by external discriminatory efforts. If, on the other hand, Ps, males $>$ Ps, females, but Pn, males $\leq$ Pn, females, then there is a good chance that differences in productivity may be due to such efforts.

METHOD

A ten page questionnaire was developed, and pretested at four universities in Ohio. As a result of the pretest, some changes were made to improve the clarity of the questions. The questionnaire was then mailed in March, 1974 to a sample of 321 male and 65 female faculty members located in departments of business administration and psychology which maintained graduate programs. With one follow-up in June, 1974 the number of responses was 162, representing a 42% return rate. Of these, 143 were usable data, 118 males and 25 females. 38% of the males and 40% of the females were from psychology departments with the remainder from departments of business administration. One more follow-up is planned.

Questionnaire:

The questionnaire was composed of 54 items, most of which were multiple choice. It was felt that this type of format would facilitate response rate. Faculty members receiving the questionnaire were told this was a study examining productivity and rewards in academe. The questionnaire allowed for information on 27 productivity measures and 15 reward measures (these may be seen in Tables 1 and 2). In addition, demographic information was collected on:

Race
Marital status
Age
Number and age of children
Highest degree attained
Date of degree
Prestige of school from which degree was granted
Prestige of school now employed
Size and location of school now employed
Number of years at current institution
Prestige of universities at which previously employed
Size and location of universities at which previously employed
Length of time spent at each school
Area of specialization

RESULTS

As seen in Table 1, differentiation of rewards does exist with respect to pay. It was found that entry level pay and current level pay were significantly less for women than men. No sex related differences were found, however, on other reward measures such as the number of graduate students taught or advised, office or telephone, research assistant time, or convention expenses, with the exception of job rank which revealed that women faculty have a lower current rank than men.

Productivity:

To determine productivity differences, t-tests were computed between means on 27 productivity items. As seen in Table 2, differences on nine items proved significant, i.e., high, moderate, and low prestige journal articles, competitively-selected papers, invited addresses, books, grants, chairing of committees, and blind review articles. However, of these nine items, eight had been classified as items susceptible to discriminatory bias in favor of reflected greater productivity of women over men.

The [illegible] would have found [illegible]'s [illegible],

publication in scholarly journals, women do produce less than do male faculty members. This method of gauging productivity remains susceptible to discriminatory bias. In many aspects of productivity which are less susceptible, such as attendance at professional meetings, community activities, and university and departmental committee work, women were no less productive than men. However, in one important aspect of productivity which is considered to be a non-discriminatory item, publications in blind review journals, women again were less productive than men.

We are forced to conclude, therefore, based on these data, differentiation does exist between men and women, but at the "micro" level, discrimination does not exist. At the "macro" level, however, discrimination is quite possible. It is conceivable that even non-discriminatory items such as publication in journals employing blind review process is subject to indirect unfair discrimination. In order to carry out research, funds are frequently necessary to pay subjects, provide travel expenses, computer time, etc. Frequently this money comes from university "seed money" or from individually held grants. Since women attain significantly fewer grants than men, it is reasonable to assume that there would be less money available to female faculty members than to males for research purposes. This could affect the quality of research done, having an effect on article acceptance, even in blind review journals.

Additionally, organizations may be reluctant to give organizational access to female faculty members for a variety of reasons, such as disruption of work (particularly in all male or blue-collar work areas) for fear that any data gathered could be suspect due to different responses given female vs. male researchers.

The possibility of "macro" discrimination becomes even more viable when one examines qualifications of faculty members prior to their first jobs. It was found that there were no significant differences between men and women with regard to prestige of graduate school attended, time spent on scholarship, research or teaching assistant, highest degree attained, or publications and presentations prior to acceptance of the first job. It appears therefore, that differences in productivity are noticeable only after differentiation of rewards has taken place. If this is indeed the case, much more effort needs to be devoted to understanding and rectifying discrimination at the "macro" level.

Table 1. Rewards Given Faculty by the University.

Reward	Males Median	Mean*	SD	Females Median	Mean*	SD	t
Beginning Pay First Job	$9000-12000	3.1864	1.5741	$6000-9000	2.40	1.3539	2.30 p < .05
Ending Pay First Job	$12000-15000	3.9492	1.9164	$6000-9000	2.56	1.4166	3.41 p < .01
Beginning Pay Current Job	$15000-16000	4.8814	1.3535	$12000-15000	4.00	1.3229	2.94 p < .01
Current Pay	$18000-21000	6.1186	1.3408	$12000-15000	2.84	1.1789	9.90 p < .01
Rank First Job	Asst. Prof.	2.8814	2.2614	Asst. Prof.	3.44	3.0510	NS
Rank Current Job	Assoc. Prof.	3.0000	.8963	Assoc. Prof.	2.52	.8226	2.45 p < .05
Prestige First Job	Low	2.7627	.9004	Low	2.64	1.2401	NS
Prestige Current Job	Low	2.5789	.7242	Mod	2.40	.8944	NS
Number of Grads Taught Last Year	21-40	2.6864	2.3120	1-10	2.20	2.1794	NS
Number of Grads Working With You	1-3	1.6695	1.5527	1-3	1.52	1.3925	NS
Number of Grad Advisees	1-3	1.8136	1.0577	0	1.28	2.0720	NS
Number of Grad Hours Taught	4-6	2.6864	2.3119	1-3	2.20	2.1794	NS
Hours of Res. Assistance (per week)	1-10	1.66	1.6236	1-10	1.32	1.2800	NS
Convention Expenses	50-75%	2.66	1.5300	50-75%	2.46	3.4952	NS
Private Office	yes (91%)	1.0932	.2920	yes (84%)	1.16	.3741	NS
Private Phone	yes (94%)	.8559	.3761	yes (84%)	.92	.4000	NS

*Means and SD represent equal interval grouped data.

Table 2. Differences in Productivity Betweenn Male and Female Faculty Members.

Potentially Discriminatory Measures	Males		Females		
	Mean	SD	Mean	SD	t
University Awards	.1695	.3768	.2000	.4804	NS
Community Awards	.0254	.1581	.0800	.2769	NS
National Awards	.1525	.3611	.1200	.3317	NS
Professional Awards	.2627	.4420	.2000	.4082	NS
Offices Held in Professional Organizations	.7458	1.1634	.3200	.9000	NS
Number of Department and Univ. Committees Chaired	.8475	1.0096	.3600	.4899	2.34 $p < .05$
Number of Advisory Committees	2.9407	2.5091	2.1200	2.4035	NS
Number of Advisory Committees Chaired	.9661	1.5794	.3200	.8524	NS
Number of Community Activities Without Compensation	.7228	1.1373	.6000	1.2583	NS
Number of High Prestige Journal Articles	2.1356	1.6651	1.2800	1.3395	2.39 $p < .05$
Number of Moderate Prestige Journal Articles	2.[illegible]	1.5855	1.2400	1.3136	2.85 $p < .01$
Number of Low Prestige Journal Articles	2.4660	1.6804	1.5000	.8596	3.73 $p < .01$
Number of Invited Addresses at Prof. Meetings	1.8559	1.4196	.6400	.8239	4.11 $p < .01$
Number of Other Invited Addresses	1.7542	2.1423	.9200	1.2845	NS
Number of Books	.9661	.9144	.2800	.3756	3.66 $p < .01$
Number of Book Reviews	1.1949	2.1[illegible]2	.6000	1.[illegible]8	NS

Potentially Discriminatory Measures	Males Mean	Males SD	Females Mean	Females SD	t
Number of Competitively Selected Papers	1.7542	1.6488	.6800	.6649	3.92 $p < .01$
Number of Grants	1.1186	.8338	.7200	.5270	2.28 $p < .05$
Grants < $1,000	.0508	.2206	.0400	.2000	NS
Grants $1,000-$50,000	.5339	.3740	.4000	.3000	NS
Grants $50,000-$100,000	.0763	.2666	.0800	.2769	NS
Grants > $100,000	.1102	.3144	.0400	.2000	NS

Non-Discriminatory Measures	Mean	SD	Mean	SD	t
Number of University Committees (Last year)	1.6695	1.2680	1.4000	1.5811	NS
Number of Departmental Committees (Last year)	1.8644	1.2937	1.9600	1.3064	NS
Number of Community Activities Without Compensation	1.1695	1.2493	1.3200	1.5470	NS
Number of Conventions Attended Last Year	1.9068	.9870	1.7200	.9363	NS
Number of Blind Review Articles	1.5000	1.4529	.6000	.8452	3.01 $p < .01$

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