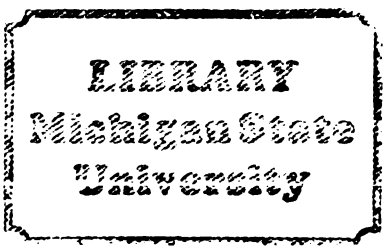

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Jayne A. Schuiteman

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AN EXAMINATION OF GENDER DIFFERENCES IN SCHOLARLY PRODUCTIVITY AMONG PHYSICAL EDUCATORS

By

Jayne A. Schuiteman

A THESIS

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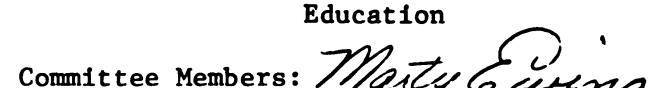
Committee Members: 
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ABSTRACT

AN EXAMINATION OF GENDER DIFFERENCES
IN SCHOLARLY PRODUCTIVITY AMONG
PHYSICAL EDUCATORS

By

Jayne A. Schuiteman

The purpose of this study was to examine gender differences in scholarly productivity among physical educators in higher education. This study defined productivity as research activity which results in publication in a refereed journal within the field of physical education. Nineteen journals were examined for a five year time period from 1979 to 1983 and results were based on a total of 1798 articles and 2623 authors. The results indicated that there were significantly more men than women who were primary and secondary authors. Journals which had strong female representation on their editorial boards tended to publish more manuscripts authored by women. The findings were compared to those patterns of productivity existing in other academic disciplines. The explanation of these results included a discussion of the structural barriers that may inhibit the scholarly productivity levels of female physical educators.

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CHAPTER I

INTRODUCTION

Women are entering faculty positions in higher education at a greater rate today than at any other time, yet a number of researchers have reported that women in higher education do not receive the same opportunities for promotion, rank, pay, or prestige in their positions that men do (Aker, 1977; Fields, 1982; Gappa & Uehling, 1979; Hochschild, 1974). Those researchers who have focused specifically on women in the field of physical education have found similar results (Ashcraft, 1973; Fallon, 1973). The search for specific reasons for this differential treatment has led investigators to examine the structure of the institution of higher education.

Higher education is an institution historically shaped by privileged white males; its structure has assumed their life cycles and characteristics. The structure contributes to the differential treatment of women within this "male world." In order to change the present situation, concrete aspects of differential treatment within the university must be identified.

One often cited explanation for the differential treatment that women experience is lack of scholarly productivity (Aker, 1977; Fallon, 1973; Glenwick, Johansson & Bondy, 1978; Safrit, 1979; Widom & Burke, 1978). Productivity is expected by university administrators (Bernard, 1964) and demands many of the

so-called male gender characteristics such as assertiveness, competitiveness, and high ambition level that are expected and rewarded in so many other areas of higher education. Safrit (1979) noted that research activity requires assertiveness and going against the status quo. Aker (1977) postulated that a lack of productivity may be linked to a lack of ambition. Assertiveness and ambition are two characteristics generally associated with the male gender (Gappa & Uehling, 1979). The findings of researchers who have investigated productivity differences between women and men seem to support the notion that scholarly research demands characteristics that many women may not display.

Although productivity levels differ by field and some fields show few productivity differences among women and men, several investigators who have focused on productivity in higher education have reported that men published more than women or that men had a stronger preference for research than women (Widom & Burke, 1978; Glenwick et al., 1978). However, no such studies have focused on the productivity of physical educators and it cannot be assumed that the same productivity differences that seem to exist in other fields necessarily exist in physical education. The latter discipline has unique characteristics which may not be shared by other disciplines. First of all, the field of physical education has had a history of strong female leadership and influence

(Spears, 1979). Second, most individuals in physical education have a background in sport which is considered to be a masculine domain (Boutilier & SanGiovanni, 1983). These characteristics may have a differential influence on the female and male physical educators. Therefore, it is important to investigate the productivity of women and men who are in the field of physical education apart from that of females and males in higher education. Two investigators (Fallon, 1973; Safrit, 1979) have attempted to do so and found that male physical educators seemed to be more productive than female educators in the sense that males published more than females. However, Fallon's (1973) study was based on 15 year old data while that of Safrit was based on articles in one journal in one year. Thus neither article may be representative of current levels of productivity in physical education. Because productivity seems to be an essential aspect of advancement in an academic career, it would be beneficial to examine possible productivity differences between women and men in physical education.

Statement of the Problem

The purpose of this study was to investigate the beginning assumptions on which Safrit (1979) based her conclusions. A legitimate concern was expressed that women in higher education were not as productive as men (Aker, 1977; Bernard, 1964; Glenwick et al., 1978; Katz, 1973; Lipman - Blumen, Stivers, Tickamyer, &

Brainard, 1975; Persell, 1983; Widom & Burke, 1978). Yet there was no guarantee that this assumption was applicable to women in physical education for three reasons. First, the field of physical education has unique aspects which are not shared by other disciplines. These unique characteristics may influence women and men in the field, differently. Second, Safrit's (1979) methods of indicating productivity may not have given a true indication of the productivity levels of physical educators. Third, the two available studies (Fallon, 1973; Safrit, 1979) which focused on the productivity of physical educators may have been out of date and as a result, may not have reflected the current productivity levels of physical educators.

Hypothesis

The following hypothesis was investigated:

There was a significant difference in the productivity levels of women and men in the field of physical education who had obtained doctoral or post-doctoral degrees and who were teaching at the college or university level.

Specifically stated: Men were more productive than women.

Sub-Questions

Besides the above stated hypothesis, several other questions were also investigated.

1. Were there gender differences with respect to primary and secondary authorship?

2. Were women and men clustered into particular sub-disciplines within the field of physical education?
3. Was the area of sub-discipline associated with degree of productivity?
4. What were the gender distributions of the editors and editorial boards of each journal investigated?

Specific hypotheses were not developed because these questions were preliminary and direction of results could not be predicted. It was hoped that answers to these questions would allow for a greater understanding of possible gender differences in productivity.

Significance of the Study

Determination of productivity differences between women and men in the field of physical education is important. Productivity is a criterion used for hiring and promotion. Presently, women in physical education, as in the rest of higher education, experience differential treatment. The amount of productivity may be an element that women can deal with individually. Further structural changes would demand collective efforts.

Definition and Explanation of Terms

For the purpose of clarification, the following definitions and explanations were used in this investigation:

Productivity: Scholarly research activity which results in publication in a refereed journal within the field of physical

education. In this study, individual authors were counted for each published article and individuals who authored more than one article were counted more than one time.

Refereed Journal: A professional journal that accepts manuscripts for publication only after those manuscripts have been reviewed and processed by a review board through procedures established by the journal's editorial board.

Assumptions

The following assumptions were made for the investigation:

1. Refereed journals in physical education and the field's various sub-disciplines reflected topics which were specifically related to physical education, sport, and physical activity.
2. The membership in the American Association of Health, Physical Education, Recreation, and Dance (AAHPERD) of individuals who had obtained a doctoral or post-doctoral degree and were teaching at the college or university level reflected the numbers of women and men in the field of physical education who would be in positions where scholarly productivity would be expected.

Limitations of the Study

The proposed investigation was subject to the following limitations:

A. Selection of the method designed to determine

productivity: published articles in refereed journals within the field of physical education.

B. Selection of the journals investigated. The journals selected for analysis were journals within the field of physical education. It is understood that researchers do submit manuscripts to journals outside of physical education.

C. Determination of the ratio of women and men in physical education who were in positions where scholarly productivity was expected.

D. Missing volumes/issues: certain volumes and/or issues of particular journals were unavailable at the libraries the investigator visited.

Summary

Although women are moving into more positions in higher education and specifically, physical education, they still experience differential treatment concerning promotion, rank, pay, and prestige in their positions, such treatment may be linked to degree of productivity. Researchers have investigated productivity levels of academic women and men but few have focused specifically on physical education.

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

The following discussion of productivity will first focus on women in general higher education, followed by a more specific examination of women in physical education. These women may share many similarities with women in other fields but they may also be influenced by the unique characteristics of physical education.

Women in Higher Education

Today more than ever before, women are taking advantage of opportunities afforded them by higher education. At the undergraduate level, women make up approximately half of the student populations. More women are moving into faculty and administrative positions (Gappa & Uehling, 1979). However, this does not mean that women are receiving equal opportunities for employment within education. Women faculty members are generally confined to a limited number of disciplines such as education, home economics, English, foreign languages, and the arts (Bernard, 1964; Gappa & Uehling, 1979). They are more likely to be employed in two or four year colleges rather than elite universities, and generally are found in lower, non-tenure, academic ranks. For example, women received 46% of all bachelors, 48% of all masters, and 26% of all doctorate degrees awarded in 1978 (U.S. Bureau of the Census, 1981); but only 11% of tenured faculty consisted of women at American universities in 1979 (National Center for

Education Statistics, 1980). In 1981, 74% of the faculties consisted of men and 70% of those men were tenured. Women made up 26% of faculties and only 50% of those women were tenured (National Center for Education Statistics, 1980, 1981). Thus, there were fewer women on college and university faculties and they were less likely to be tenured than the men. Comparison by rank shows striking differences between female and male academicians. Women account for one in two instructors, one in three assistant professors, one in five associate professors, and one in ten full professors (National Center for Education Statistics, 1980, 1981). Women faculty members are not promoted as rapidly as men. There seem to be salary discrepancies at every institution, at every level, and in every discipline (Fields, 1982).

Why are so few women faculty found in elite universities? Why do so few women students attain advanced degrees? Why are female faculty less likely to have highly ranked positions and tenure than their male counterparts?

Overall, males seem to publish more than females (Bernard, 1964). For example, Fava (1960) found that 8-19% of the doctorates awarded in sociology over an eleven year period were received by women, yet, only 2-13% of the articles published in two major sociological journals were authored by females during the same time period. Similar results were obtained by Babchuk

and Bates (1962) for sociologists and by Bernard (1964) for zoologists. The results of these studies, however, may not reflect current productivity rates since the data were collected in the 1950's and 1960's.

Current studies indicate that differences in productivity between academic women and men may still exist (Katz, 1973; Lipman-Blumen et al., 1975; Persell, 1983). Cole (1979) reported that men were more productive than women in the natural sciences. Similar results were obtained by Converse and Converse (1971) for women and men in political science and by Helmrich, Spence, Beane, Lucker, and Matthews (1980) for individuals in the field of psychology. Although this investigation focuses on productivity, the academic climate and other differences between academic females and males should be briefly discussed.

Although Aker (1977) found male graduate students to be more ambitious than female graduate students, other investigators (Widom & Burke, 1978; Glenwick et al., 1978) reported that female and male faculty members seem to have the same amount of involvement in their career and attach the same degree of importance to it. Yet females were more likely than males to perceive differential treatment based on gender (Gappa & Uehling, 1979; Glenwick et al., 1978). Glenwick et al. (1978) reported that academic women tended to be less traditional than men, supporting changes such as more flexible tenure policies and

day-care. Aker (1977) hypothesized that women holding traditional views of their role in society were hindered in their academic careers. Echoing Glenwick's (1978) finding concerning non-traditional females, Gappa and Uehling (1979) also found that female faculty members tended to hold less traditional views than males. One such view relates to marital status which has been the focus of several investigators.

Hochschild's (1974) discussion of women in academia suggested that differences in productivity may be related to marital status. She argues that the classic academic career is tailor-made for the traditional man with his traditional wife. Success, or personal achievement, demands a tremendous amount of time for one's own work. Family and household responsibilities interfere with that time and therefore with success. At the same time, family members can be used to enhance one's career.

> All things being equal, the university rewards the married family-free man. . . If we inspect the social context of male productivity, we often find nameless women and a few younger men feeding the 'productive one' references, computer outputs, library books, and cooked dinners. Women, single or married, are in competition not simply with men, but with the <u>heads of small branch industries</u>. . . It is one thing for a woman to freely <u>decide</u> against marriage or children as

> issues on their own merits. But it is quite another matter to be forced into the choice because the career system is shaped for and by the man with a family who is family-free (Hochschild, 1974, pp. 67).

Hochschild's (1974) observations were supported empirically by Freeman (1977) who reported that single women tended to hold higher academic ranks than married women but that married men tend to hold higher positions than single men. Researchers have also focused specifically on the relationship between marital status and productivity. Interviews with fifteen female academic administrators showed that sacrifices had to be made in order to balance home and career responsibilities including the delay of writing for publication (Villadsen & Tack, (1981). Eight of the women reported that their productivity suffered because of the effort to fulfill dual commitments at home and on the job. These studies show that marital status and/or the presence of children may inhibit the productivity levels of women; however, there are studies which show different results.

Even though Freeman (1977) showed differences in rank for women depending on marital status, she found no differences in productivity. Married men published articles and books at a higher rate than single men but no differences existed in the rate of productivity between married and single women.

Helmrich et al. (1980) found that fewer academic females were

married compared to males and that more women than men were childless among currently or formerly married individuals. When looking at the productivity levels of academic females and males, Helmrich et al. (1980) found no significant relationships between productivity and citations, and marital status or the number of children for either sex. Women who had no children, whether or not currently married, were only slightly more productive than women who had children. Both groups of women were significantly less productive than men.

Hamovitch and Morgenstern (1977) conducted an investigation to specifically examine the relationship between the presence of children and scholarly productivity. They reported that productivity did not decline because of the presence of children. Single males published 13% fewer articles than married men but no differences were found for women.

Even though these studies seem to show conflicting results, they all provide support for Hochschild's (1974) contention that the academic career is tailor-made for the traditional man and his traditional wife who assumes the majority of family obligations. For instance, even though Helmrich et al. (1980) found no relationship between productivity and marital status or the number of children for either sex, fewer women in the sample were married or had children. Thus, married men are in a distinctly advantaged position over single men, single women, and married women.

Other reasons for gender differences in productivity may originate within the structure of higher education. Hamovitch and Morgenstern (1977) reported that the number of weekly hours of teaching and the teaching of only undergraduate courses were negatively related to productivity. They found that women tended to have heavier teaching loads than men and that 49% of the women taught only undergraduate courses compared to 29% of the men. Thus, females may have less time than men for conducting research.

The number of citations, another often used measure of productivity, may be negatively affected by women's isolation from the "old boy's" network. "All things being equal, individuals of higher visibility tend to be cited more frequently than others, and women are more likely than men to fall outside of this charmed circle, thus creating a vicious one" (Helmrich et al., 1980, p. 907). Tuchman (1980) pointed out that citations are used to show referees and readers that the author has credibility by showing familiarity with the "accepted masters" (sic.). It is far safer to cite a respected male than to cite an unknown woman, thus reinforcing male dominance in academia. Similarly, the "old referees'" network may also limit the publishing efforts of female academics. Women are extremely underrepresented as editors and members of review boards who may influence decisions concerning women's and men's manuscripts (Menges & Exum, 1983). The structure of higher education can, therefore, be seen as a major

factor that may inhibit the productivity of women.

Women in Physical Education

According to Hoferek (1979), female physical educators tend to be in less prestigious positions than men primarily because very few of those women, as compared to men, obtain doctoral degrees. Those female physical educators who do obtain doctoral degrees are often employed in positions well below their level of preparation and aspiration. Fallon (1973) conducted a study involving 340 doctoral recipients in physical education who graduated in 1962-63 and 1967-68 from 50 different institutions. Prior to doctoral graduation, 46% of the men had published at least one article but only 33% of the women had done so. He reported that upon doctoral graduation, 40% of the women were hired into positions which primarily involved teaching activity classes for freshmen and sophomores whereas only 13% of the men were hired into a similar situation. Consequently, these females had heavier teaching and service loads and thus had little time for research and scholarly writing. Fallon (1973) failed to describe, however, the job characteristics of the remaining 60% of the women and 87% of the men.

Ashcraft (1973) surveyed 1221 physical educators employed at 131 colleges and universities to determine if differences existed in professional and employment factors for women and men. She found that not only did women teach more activity classes than men

but that male physical educators generally had higher rank, were promoted faster, taught more graduate level courses, served on fewer committees, and earned more money than their female counterparts.

Safrit (1979) concluded that men published more than women based on the number of manuscripts submitted to Research Quarterly in a one year time period. However, her methods of examining productivity may not have accurately reflected the true scholarly activity of physical educators for several reasons. First, Safrit's (1979) conclusions were based on the apparent assumption that there were equal numbers of female and male physical educators. She reported that men submitted three and one-half times as many manuscripts as women. However, it is possible that there were three and one-half times as many men as women in faculty positions at the university level in which case women and men were similarly productive. Second, Safrit's (1979) conclusions were based on manuscripts submitted to just one journal. There are many refereed journals representing various sub-disciplines yet none of these were investigated. Finally, her conclusions were based on only one year. Not only would it be beneficial to examine more journals but also to investigate over a longer period of time for a truer indication of possible productivity differences between female and male physical educators.

Both Fallon (1973) and Safrit (1979) expressed concern about the lack of published research by women in physical education. According to Safrit (1979), in a one year period, men submitted three and a half times more manuscripts to Research Quarterly than women. She argued that this is of serious consequence because university administrators expect faculty members to engage in scholarly activity. Thus many women may not get high positions because men are more productive in scholarly research. Women have reported that they prefer teaching. Lack of time was perceived to be the major obstacle to high productivity. Excellence in teaching, though obviously desirable, will not by itself improve the status of women in higher education unless it is accompanied by excellence in scholarship.

To this point a lack of productivity on the part of women has been described but merely describing this lack of productivity is not enough. It is essential to ask the question "Why?" (Hall, 1979). Higher education has traditionally been a male institution and merely opening its doors to women does not seem to have changed its basic structure. This structure is based on socially imposed gender expectations. These expectations are institutionalized, socially constructed, and are manifested in different behaviors for males and females.

Men are viewed as aggressive, independent, dominant and logical. Women are seen as passive, dependent,

> subjective, emotional, non-competitive, and indecisive . . . Sex role stereotypes assign women a second-class, passive, and nonintellectual role, or label them as unfeminine (Underlining mine) (Gappa & Uehling, 1977, p. 30).

Children are taught appropriate female and male behaviors from the day they are born. Maintenance of rigid gender expectations limits the potential of both academic women and men but seems particularly damaging for women because society and the university structure places more value on so-called male gender characteristics. Such gender expectations may be more polarized for those in physical education.

Unique Characteristics of Physical Education

Most physical educators have a competitive sport background. Traditional sport is another male institution and has maintained a strong polarization of gender expectations (Oglesby, 1978). Heide (1978) calls sport the epitome of the male power game; an exercise of manhood. According to Boutilier and SanGiovanni (1983):

> It is on the fields, courts, rinks, and playgrounds of America that boys learn to value masculinity. It is in their games that they assert their difference from girls and their superiority over them. It is in sport that they learn to compete, to control, to take risks, to be strong, and to achieve mastery over self and

> others. It is in sport that they begin to understand why and how they are to become men (p. 101).

Boys are encouraged and even expected to participate in sports. Because traditional sport values are congruent with "masculine" values and incongruent with "feminine" values, women who choose to participate do so against society's expectations.

Many women are now challenging such gender expectations. Female athletes tend to display both "masculine" and "feminine" behavior characteristics (Bem, 1974; Knoppers, 1980), in other words, they are considered to be androgynous. According to the androgyny model, the role of woman and the role of athlete are not mutually exclusive categories but instead are compatible. Consequently, through her sports participation, a female physical educator may already have learned to display masculine as well as feminine qualities and to cope in a "masculine world."

The sports experience, therefore, has implications for women who choose to enter the field of physical education. Female physical educators who have a sport background have displayed behavioral characteristics which are necessary for success in sport. Such characteristics may also be an asset in higher education since the behaviors necessary for success in sport are the same characteristics necessary for success in academia. It seems therefore that these same women should be better prepared for a successful academic career more so than women in other areas

of higher education. Aker's (1977) advice to entering female graduate students was that they develop non-traditional attitudes about the proper role of women. Female physical educators may have already done so. Heide (1978) maintains that participation in physical activity and sport can teach women to believe that they can act to change their own lives and the world shared with men.

Men in physical education, however, may be affected by their sport background in a different way than are women. As was previously pointed out, traditional sport teaches and demands "masculine" characteristics. Young boys in our culture are socialized into their "masculine" role from the day they are born and traditional sport reinforces masculinity. Research has shown that male physical educators tend to be more instrumental or traditionally masculine than androgynous (Hoferek, 1978). In addition, male physical educators tend to hold conservative views (Sage, 1980). If these traditionally masculine men maintain rigid gender expectations for themselves and others, their perception of their female colleagues will be affected. If female colleagues are seen as dependent, passive, unambitious, and to lack self-confidence, they will not be perceived to be competent. Consequently women may be kept in a subordinated position within the department. Even though female physical educators seem to be well prepared for a successful academic career, their careers may

be conducted in departments where men hold stereotyped expectations for women and it is these same men that hold the power and leadership positions within the department (Hoferek, 1978).

Women have, however, had power and leadership positions in physical education. A second characteristic unique to the field is that of the strong influence of women right from the beginning (Spears, 1979). AAHPERD has always recognized the contributions women make to the field and alternates the presidency at the district and national levels between a woman and a man. Historically, physical education departments were single sex departments and prioritized teaching and service over research (Mordy, 1977).

Spears (1979) studied the careers of nine very successful women in physical education. She noted that their success resulted from the same patterns and efforts of any successful person, man or woman. She also noted that success was task-oriented, not sex-oriented. However each of the women in her study experienced her successful career during a time when physical education departments were separate for women and men. As was noted above, women were in positions of leadership when departments were single sex and success may have been interpreted differently with more emphasis placed on teaching and service rather than research. It may be that these early female pioneers

in the field served as teaching and service role models for other women rather than steering them toward research. Many single sex physical education departments have merged within the last 15 years due to interpretation of Title IX, economic or administrative reasons (Hoferek, 1980). At the time of merger these departments were in a unique position to use the best that both the women's and men's departments had to offer. However, according to Hoferek (1980), the power and status of women has declined as departments have merged. Men have maintained the leadership positions while women are again clustered at the lower end of rank and pay. The same holds true for athletic departments. In programs that have merged within the last ten years, the person in charge of the women's program has less status, authority, and responsibility than was held prior to the merger (Freck, 1981). Consequently female physical educators and coaches have little power within their departments and the cultural climate of physical education departments may outweigh the individual personality characteristics that female physical educators may possess.

Summary

In conclusion, female physical educators face many of the same circumstances that women face in the rest of higher education such as a slower rate of promotion, lack of access to network, less pay, and less prestige (Ashcraft, 1973; Hoferek, 1979).

Productivity or the lack of it directly influences rate of promotion, and therefore pay, and prestige. Significant concern about the lack of productivity on the part of female physical educators was expressed by Fallon (1973) and Safrit (1979). Characteristics unique to the field of physical education may affect women and men in the field differently which may affect the degree of productivity of each. Men are currently in most power and leadership positions and may have lower expectations and poor perceptions of their female colleagues. Women may display characteristics which are necessary for successful careers but have had role models who emphasized teaching and service rather than research.

Increasing productivity levels may be a key in improving women's situation in physical education. Therefore, it must be determined if productivity differences do exist. If they do not exist, determination of other causes for the differential treatment women experience is necessary to rectify the current situation.

CHAPTER III

PROCEDURES

Productivity differences between female and male physical educators were investigated by examining the number of articles authored by each gender and comparing those numbers to the approximate proportion of female and male physical educators who were in faculty positions where scholarly productivity would be encouraged and expected.

Rationale for Definition of Productivity

A number of methods have been used to measure productivity. They have included the publication of books, citations in textbooks, citations in the research of others, research presentations at conferences, and publications in refereed journals (Cox & Catt, 1977; Hasbrook & Loy, 1983; Safrit, 1979; Scully, 1979). The last method was chosen for use in this study for several reasons. First, the number of physical educators who have published books is considerably less than those who have published articles and many years may lapse between the writing and publication of a book. The attempt to compare articles and books would have been very difficult. A single book may represent many years of effort and therefore is difficult to compare to a single article. Second, citations by others may reflect quality rather than quantity (Hasbrook & Loy, 1983). Hasbrook and Loy (1983) noted that citation analysis objectively shows "scholarly

impact" upon the field. However, Persell (1983) stressed that citation analysis cannot be objective because female visibility may be impaired by discrimination and by lack of access to the "old boy network." Thus, citation analysis in articles and books was not included in this study.

Finally, research presentations were also excluded from the definition of productivity because of the variation in presentation methods among and within conferences. For example, some presentations are made formally by the primary author before a large audience, whereas other presentations are made informally as poster presentations. Some researchers do not present their own work but send a secondary author or graduate student to make the presentation for them. Some presentations may be invited while others must be submitted for review. In addition, research presentations may later be published in a refereed journal causing overlap in the published count which would have confounded the data. Consequently research presentations were not cited in the productivity count.

Publication in refereed journals within the field of physical education was chosen as the method for measuring productivity because the purpose of this investigation was to determine the quantity of scholarly research being conducted by physical educators. Quantity seems best measured by noting the frequency of publication (Hasbrook & Loy, 1983; Scully, 1979). As was

previously stated, this investigator sought to determine the quantity rather than quality of productivity and the possible differences that may have existed between women and men in the field of physical education.

The investigator acknowledges that physical educators do publish in periodicals outside of the field, However non-physical education journals were not considered for several reasons. First, journals within a given field would seem to provide the most accurate reflection of the current state of productivity within that field. Second, prestige in a discipline comes from publishing articles in journals that are widely read by other professionals within the same discipline. Safrit (1979) writes that it is critical for research within the field to be available to other professionals for their scrutiny and criticism. Finally, articles which are directly concerned with the field of physical education and its various sub-disciplines are most likely to be published in journals within the field. Therefore, only periodicals within the field of physical education were considered in this investigation.

Selection of Journals

Refereed journals within the field of physical education that represented the various sub-disciplines as well as cross-sectional periodicals that were not associated with any one particular sub-discipline were selected for analysis. The investigator

interviewed graduate faculty members in the Department of Health and Physical Education at Michigan State University and asked them to identify all the refereed journals which represented their sub-discipline to ensure the appropriate selection of periodicals. Based on these interviews the investigator selected the following journals for analysis in the investigation:

Arena

Canadian Journal of Applied Sport Sciences

International Journal of Sport Psychology

International Review of Sport Sociology

Journal of Health, Physical Education, Recreation, and Dance

Journal of Human Movement Studies

Journal of Leisure Research

Journal of Motor Behavior

Journal of Sport Behavior

Journal of Sport History

Journal of Sport Psychology

Journal of Sport and Social Issues

Leisure Sciences

Medicine and Science in Sports and Exercise

Motor Skills: Theory Into Practice

Quest

Research Quarterly

The Physical Educator

The Physician and Sports Medicine

Certain issues of several journals were unavailable at any of the libraries consulted by the investigator. The 1983 issues of The Physical Educator, International Review of Sport Sociology, and Journal of Human Movement Studies had been sent out to be made into bound editions. The 1983 issues of Motor Skills: Theory Into Practice had never been received, and finally, the 1981 issues of Arena were missing from each library.

Determination of Female/Male Ratio

It was necessary to establish the ratio of women to men in the field in order to determine whether or not there were gender differences in productivity. There were three available methods to determine this ratio: faculty listings in the Physical Education Gold Book, membership in the National Association for Physical Education in Higher Education (NAPEHE) and membership in the American Association of Health, Physical Education, Recreation and Dance (AAHPERD).

The Physical Education Goldbook contained a listing of all faculty members for each college and university in the United States. However, the listing included no information concerning rank or degree. The listing also included coaches and activity instructors, individuals who would likely have few expectations to engage in scholarly research. Therefore, the Physical Education Gold Book was not used as a source for determining the female/male

ratio.

The NAPEHE membership directory was also considered as a source for the female/male ratio. However, NAPEHE membership figures indicated a total of 522 (54%) women and 448 (46%) men as compared to AAHPERD membership totals which indicated that 40% and 60% of the members were women and men respectively. It was felt that these numbers were not accurate reflections of the true number of women and men in the field of physical education because NAPEHE has historically had a strong influence from women (Spears & Swanson, 1978) and even today, more women are members of NAPEHE than men.

This investigator determined the approximate ratio of women to men by using membership figures for 1983 from AAHPERD. Membership data specified the type of institution of employment as well as the degree earned for each member. Women and men were included in the ratio only if they were employed at the college or university level and had obtained a doctorate or postdoctorate degree. These criteria were chosen because they best represented those physical educators who would be in positions where productivity was encouraged and expected. Expectations for productivity vary by type of institution and by type of degree (Bernard, 1964; Persell, 1983). Therefore those who were not employed at four year postsecondary institutions and who did not have a doctoral degree were excluded from the ratio. It was

assumed that productivity expectations for these excluded individuals would be low. AAHPERD membership figures[1] gave only approximate rather than exact numbers but it was believed that these numbers sufficiently represented the actual ratio of women to men in physical education who were in positions where productivity was expected.

Time Span on the Investigation

Data were collected on articles published in the selected journals for a five year time period ranging from 1979-1983. This time span was chosen for two reasons. First, it was assumed to reflect current productivity rates of women and men. Second, it was during this time span that the gradual shift in physical education from a teaching and service emphasis to a research emphasis occurred. This priority seemed to be reflected by the large number of new professional journals that have emerged in the last few years to accommodate the increased amount of research available for publication. For example, six of the nineteen journals that were selected for this study began publication within the last five years.

Classification of Data

The data were classified according to the following criteria: 1) gender of the author(s), 2) primary or secondary authorship, and 3) the sub-discipline represented by the topic of the article.

Gender was determined by the author's first name.

Occasionally it was impossible to determine the author's gender because of a common first name such as Pat or Chris or because of the use of first initials. Several techniques were employed to determine the author's gender. First, the investigator consulted the Physical Education Goldbook which listed specific physical education faculties by institution and the National Faculty Directory which alphabetically listed faculty members from all disciplines at the college or university level. Second, bibliographies and/or citations in the particular article or other articles were checked to see if full first names were used instead of initials. Finally, in a number of instances, where initials were used in one article, often the first name of the same author was used in a different article, allowing the investigator to determine gender. The gender of all authors was determined through the use of these methods.

Data were classified by sub-discipline so the investigator could determine if women and men were clustered into particular sub-disciplines and if sub-discipline and degree of productivity were related. Safrit (1979) noted that women tend to be drawn to the social sciences such as sport psychology and sport sociology whereas men tend to be drawn to the physical sciences such as exercise physiology and biomechanics. However, she collected no data to substantiate her assumption.

Data were classified by primary or secondary authorship since

administrators place emphasis on primary authorship when promotions and hiring are considered. Prestige is also built on primary authorship. If the majority of women who are publishing are secondary rather than primary authors, they may not develop as much prestige, and may not be hired as often or promoted as rapidly as men. In this study, when multiple authors accompanied an article, the first author listed was considered the primary author and all others were considered secondary authors unless co-authorship was specified. Single authors were considered to be primary authors.

Data which could not be classified using the above methods were classified according to their unique circumstances. Data representing student authors or authors who were outside the field of physical education, such as medical doctors and exercise specialists as well as individuals teaching outside of the United States, were collected and classified but were not compared with the numbers of women and men in the field.

Additional data were necessary in order to address two of the sub-questions. Sub-question 3 asked if the area of sub-discipline was associated with degree of productivity. Before this question could be properly assessed, it was necessary to determine approximate numbers of women and men in each sub-discipline so that the number of authors could be compared to an established ratio. It was not possible to determine the number of individuals

in all sub-disciplines for two reasons First, not all sub-disciplines have a specific membership organization which would provide approximate numbers of women and men represented in that sub-discipline. One such example is the area of sport skill instruction. Second, several sub-disciplines are represented in membership organizations consisting of a much broader membership than physical educators alone. For example, the American College of Sports Medicine (ACSM) is a broad eclectic organization consisting not only of physical educators in sports medicine, but also of physicians, exercise specialists, exercise physiologists, fitness instructors, and individuals in related fields such as anatomy and physiology. Consequently, only two sub-disciplines, sport psychology and motor performance, were chosen for analysis. These two sub-disciplines are professionally represented by the North American Society for the Psychology of Sport and Physical Activity (NASPSPA). This organization was chosen for analysis for two reasons. First, the majority of its members were physical educators, and second, each of these sub-disciplines had approximately equal numbers of women and men. The membership directory for NASPSPA provided approximate numbers of women and men in the sub-disciplines of sport psychology and motor performance.[2]

Additional information was also necessary to address sub-question 4 which dealt with the gender distribution of the

editorial boards for each of the journals investigated. The gender of the editor(s) of each and members of the editorial board were recorded. This information was not obtained for the International Journal of Sport Psychology and the Journal of Human Movement Studies because they were international journals and their editors and editorial boards were listed using either first initials or unfamiliar first names of individuals from countries other than the United States which made it very difficult to determine gender in a reliable manner.

Analysis of Data

Data collected by gender were totaled for the five year period and compared to the numbers of women and men in the field using chi-square analysis to test the research hypothesis. The hypothesis stated that gender differences for productivity would exist in the field of physical education. Specifically, it was stated that men would be more productive than women. The number of authors were totaled such that individuals who authored more than one article were counted more than one time.

Chi-square analyses were also conducted for sub-question 1 and 3. Sub-question 1 dealt with gender differences in primary and secondary authorship. The number of primary female and male authors were compared to the number of secondary female and male authors. Sub-question 3 asked if the area of sub-discipline was associated with the degree of productivity. Chi-square analysis

was used to compare the obtained number of female and male authors to the approximate number of female and male authors in sub-disciplines of sport psychology and motor performance.

Data collected by sub-discipline were totaled for each sub-discipline and percentages of women and men in each area were calculated in order to address sub-question 2 to determine whether women and men were clustered into specific sub-disciplines.

Summary

The articles in refereed journals representing all sub-disciplines within the field of physical education were examined to determine if gender differences existed in productivity. Authors were classified not only on the basis of gender but also on the basis of sub-discipline and primary/ secondary authorship to determine if gender differences existed in these areas and to determine if sub-discipline and productivity were related. The data were analyzed with appropriate statistical procedures and the results of the data collection and analysis are presented in the next chapter.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of the study was to investigate possible gender differences that may exist in the scholarly productivity of faculty in the field of physical education between 1979 and 1983. It was hypothesized that men authored more articles than women. Besides the main hypothesis, several non-directional sub-questions were also asked: 1) Were there gender differences with respect to primary and secondary authorship? 2) Were women and men in the field of physical education clustered into particular sub-disciplines? 3) Was the area of sub-discipline related to productivity? and 4) What was the gender distribution of editors and members of the editorial boards?

The results of this study have been organized so that the research hypothesis and each sub-question are addressed in the order presented in Chapter I. The results were based on a total of 2623 authors who published 1798 articles in 19 journals.

The discussion has been organized into three parts. The first section presents a discussion of this study and its findings. The second section states the conclusions of this investigation, and the third section offers implications and suggestions for future research.

Research Hypothesis. The research hypothesis stated that there would be a significant difference in the productivity levels

of women and men who had a doctorate or post-doctorate degree in the field of physical education and who were teaching at the college or university level. Specifically, men were expected to show more productivity than women. To test this hypothesis, the investigator compared the total number of female and male authors to expected numbers of female and male authors determined from the AAHPERD membership data. During 1983-84, there were 2,162 members of AAHPERD who were teaching at the college or university level and who had obtained either a doctorate or post-doctorate degree. As Table 1 indicates, women comprised 40% (n=874) of the AAHPERD members and 29% of the 2623 authors. Men comprised 60% (n=1288) of the AAHPERD members and 71% (n=1857) of the total authors. The results of a chi-square analysis indicated that men had authored significantly more articles than had women, $\chi^2(1, \underline{N}=2623)=127.23$; $\underline{p}=.000$). Thus, the research hypothesis was supported.

Sub-question 1. The first sub-question asked if there were gender differences with respect to primary and secondary authorship. A frequency count of the primary authors showed a total of 1751 authors as Table 1 indicates. Thirty percent (n=530) of them were females while 70% (n=1221) were males. The number of female and male primary authors was compared to the expected number of primary authors based on the AAHPERD membership data. The results of a chi-square analysis showed that

Table 1

Classification of AAHPERD Membership and Authors by Gender

	Females		Males		
Group	n	%	n	%	Total N
AAHPERD	874	40%	1288	60%	2162
Authors					
Primary	530	30%	1221	70%	1751
Secondary	236	27%	636	73%	872
Total	766	29%	1857	71%	2723

Note. AAHPERD is the American Association of Health, Physical Education, Recreation and Dance.

significantly more males than females were primary authors. ($\chi^2(1,N=1751)=68.76,p=.000$). A frequency count of secondary authors showed that 27% (n=236) and 73% (n=636) were women and men respectively as Table 1 indicates. The number of female and male secondary authors was compared to the expected number of secondary authors based on AAHPERD membership data. The results of a chi-square analysis indicated that significantly more males than females were secondary authors. ($\chi^2(1,N=872)=61.00$, $p=.000$). Chi-square analyses were also conducted to determine if there were

significant differences within each gender between the total number of primary and total number of secondary authors. Women represented 30% of the primary authors and 27% of the secondary authors whereas men represented 70% of the primary authors and 73% of the secondary authors. The percentage differences between the number of primary and secondary authors for both females and males was 3%. This difference was non-significant for both women ($\chi^2(1, N=766)=2.63$, $p>.05$) and for men ($\chi^2(1, N=1857)=1.13$, $p>.05$). However, there was no significant difference with respect to primary and secondary authorship within gender. Thus, men significantly outnumbered women as both primary and secondary authors.

Sub-question 2. The second sub-question asked if women and men were clustered into any of the 18 sub-disciplines of physical education represented by the journals and articles. Tables 2 and 3 show the numbers of women and men who authored articles in each of the 18 sub-disciplines. Examination of the crosstabular results indicated that 58% of the female authors were in one of four sub-disciplines: sport psychology (18%), education (15%), motor performance (13%), and sport sociology (12%). Comparisons across sub-disciplines showed that dance was the only sub-discipline where women authored the majority of articles. The areas of sport philosophy and statistics presented a more even distribution between female and male authors while the remainder

Table 2

Percentage of Authors by Gender Within Each Discipline

Sub-discipline	Females		Males		Total N
	n	%	n	%	
Adapted PE	20	32	43	68	63
Administration	22	30	50	70	72
Athletic Training	1	25	3	75	4
Biomechanics	22	20	88	80	110
Coaching	3	16	16	84	19
Dance	56	85	10	15	66
Education	117	33	243	67	360
Exercise Physiology	82	14	505	86	587
Health	0	0	2	100	2
Motor Performance	99	37	172	63	271
Recreation	9	26	26	74	35
Sport History	35	37	59	63	94
Sport Medicine	3	10	27	90	30
Sport Philosophy	9	45	11	55	20
Sport Psychology	137	30	322	70	459
Sport Skills	37	31	82	69	119
Sport Sociology	91	35	172	65	263
Statistics	23	47	26	53	49

Note. Percentages are based on the number of women and men within each sub-discipline; not percentage of total authors.

Table 3

Distribution of Gender Across Sub-disciplines

Sub-discipline	Females n	Females %	Males n	Males %	Total N
Adapted PE	20	3.0	43	2.0	63
Administration	22	3.0	50	3.0	72
Athletic Training	1	0.0	3	0.5	4
Biomechanics	22	3.0	88	5.0	110
Coaching	3	0.5	16	1.0	19
Dance	56	7.5	10	1.0	66
Education	117	33.0	243	13.0	360
Exercise Physiology	82	10.5	505	27.0	587
Health	0	0.0	2	0.5	2
Motor Performance	99	13.0	172	9.0	271
Recreation	9	1.0	26	1.0	35
Sport History	35	4.5	59	3.0	94
Sport Medicine	3	0.5	27	2.0	30
Sport Philosophy	9	1.0	11	1.0	20
Sport Psychology	137	18.0	322	17.0	459
Sport Skills	37	5.0	82	4.0	119
Sport Sociology	91	12.0	172	9.0	263
Statistics	23	3.0	26	1.0	49
		100.0%		100.0%	

Note. Percentages are based on the total number of female and total number of male authors. Percentages were rounded to the nearest .5 percent.

of areas showed a disproportionate number of male to female authors.

Male authors also tended to be concentrated in a limited number of sub-disciplines with the single area of exercise physiology accounting for 27% of all male authors. At least 80% or more of the authors in the natural sciences were male. Tables 2 and 3 show that at least 80% of the authors in the areas of exercise physiology, biomechanics, sports medicine, and health as well as coaching and sports skill instruction were men. Therefore, Safrit's (1979) assertion that women and men are drawn to different sub-disciplines seems to have held true in the present study.

Sub-question 3. The third sub-question asked if there was an association between sub-discipline and degree of productivity. Table 4 shows that 94 NASPSPA members indicated sport psychology as their sub-discipline, of whom 52% (n=49) were women and 48% (n=45) were men. Tabulation of the data showed a total of 459 authors who wrote articles dealing with sport psychology. Of these authors, 30% (n=137) and 70% (n=322) were women and men respectively. A comparison of these frequencies by means of a chi-square analysis showed that in the specific sub-discipline of sport psychology, men still authored significantly more articles than women even though the number of women and men in the sub-discipline was very similar. ($\chi^2(1, N=459)=90.82$, $p=.000$).

A similar analysis was conducted on the motor performance sub-discipline data. Table 4 shows that 112 NASPSPA members indicated motor performance as their sub-discipline, 48% (n=54) of

Table 4

NASPSPA Membership and Authors by Gender Represented in Sport Psychology and Motor Performance

	Females		Males		
Sub-discipline	n	%	n	%	Total N.
Sport Psychology					
Authors	137	30%	322	70%	459
NASPSPA Members	49	52%	45	48%	94
Motor Performance					
Authors	99	37%	172	63%	271
NASPSPA Members	54	48%	58	52%	112

Note. NASPSPA is the North American Society for the Psychology of Sport and Physical Activity.

whom were women and 52% (n=58) of whom were men. There were 271 authors who published articles focusing on motor performance. Thirty-seven percent (n=99) of these authors were women and 63% (n=172) were men. The results of a chi-square analysis comparing

membership with authorship showed that in the specific area of motor performance, men authored significantly more articles than women. ($\chi^2(1,N=271)=4.05$, $p<.05$).

Sub-question 4. The fourth and final sub-question dealt with the gender distribution within the editorial boards of each journal investigated. Table 5 shows the gender distribution of the members of each editorial board and editors and the number of articles authored by women and men for each journal. The majority of journals for which the editorial board information was available showed a dramatic under-representation of women. Twelve of the journals had no female editors during the five year time span investigated. Research Quarterly had a female editor for one and a half years; Quest had a female editor for three years; and Motor Skills: Theory into Practice had a female editor each of the five years. Each journal which had a female editor at some point during the five years had a more equal gender distribution on its editorial board than journals that had only male editors. The Journal of Health, Physical Education, Recreation, and Dance (JOHPERD) and Motor Skills: Theory into Practice had equal gender representation of women and men on their editorial boards. Only on the editorial board of Quest did women outnumber men. The Journal of Leisure Research had no female representation on its editorial board three of five years, and Journal of Sport Behavior had no females on its editorial board. Finally, six journals had

Table 5

Gender Distribution of the Editors, Editorial Board Members, and Primary Authors in Each Journal

Journal	No. of Editors		Ed.Board		No. of Articles				
	F	M	F	M	F		M		
					n	%	n	%	Total N
Arena					14	48	15	52	29
Canadian J. of Applied Sport Sciences					2	14	12	86	14
In'l. J. of Sport Psychology					9	28	23	72	32
Int'l. Review of Sport Soc.					6	32	13	68	19
J. of Health, Physical Educ. Recreation & Dance	0	5	10	10	230	31	509	69	739
J. of Human Movement Studies					2	25	6	75	8
J. of Leisure Research	0	5	2	88	0	0	7	100	7
J. of Motor Behavior	0	5	8	80	15	34	29	66	44
J. of Sport Behavior	0	5	0	30	6	19	25	81	31
J. of Sport History	0	5	3	48	12	32	25	68	37
J. of Sport Psychology	0	5	14	74	40	34	77	66	117
J. of Sport and Sociology Issues	0	3	8	55	7	12	49	86	56
Leisure Sciences	0	10	2	25	2	29	5	71	7
Medicine and Science in Sport and Exercise	0	5	9	167	22	17	110	83	132
Sport Skills: Theory into Practice	5	0	35	35	18	37	31	63	49
Quest	2	3	18	16	36	49	37	51	73
Research Quarterly	1	4	10	10	56	24	176	76	232
The Physical Educator					28	21	103	79	131
The Phyician and Sports Medicine	0	5	20	120	6	15	35	85	41

Note. The frequency count was based on years and disregarded the fact that the same individual might be the editor or that the same individuals might be members of the editorial board for 5 years. Blank spaces mean that the information was not available.

only one female on their editorial boards. The percentage of women who were primary authors classified by journal ranged from a high of 49% and 48% for Quest and Arena to a low of 0% for the Journal of Leisure Research.

Discussion

The primary purpose of this investigation was to determine if gender differences existed in the area of scholarly productivity for individuals in the field of physical education. It was clearly shown that men were significantly more productive than women in the field of physical education. This result was consistent with the findings of Safrit (1984) who on the basis of a follow-up report to her 1979 study, concluded that women continued to be less productive than men in the field of physical education.

Similarly, the results of the current study also paralleled the findings of a number of investigations focusing on productivity in the various parent disciplines of the sub-disciplines in physical education. Helmrich et al. (1980) reported that in the field of psychology, men published an average of 1.7 articles per year while women published an average of .7 articles per year. Glenwick et al. (1978) found that on the average, male assistant professors in the colleges of arts and sciences in two universities had published a total of 9.2 articles while female assistant professors had published a total of 5.2

articles. Persell (1983) reported that on the average, men in the field of education had published a total of 12.6 articles while women had published a total of 7.6 articles. Thus, the gender pattern for productivity found in other academic areas was also reflected in the current study.

With the exception of dance, the results of the current study were consistent across all sub-disciplines in physical education. Even in sub-disciplines such as sport psychology and motor performance where the number of women and men were similar, men were still significantly more productive than women. Though the findings were not surprising based on the results of studies conducted in other fields, the large degree of difference in productivity levels between female and male physical educators was not expected. As was previously explained, many physical educators are socialized into and through sport and that sport experience could possibly prepare women for a successful academic career because sport and academia demand similar behavioral characteristics (Heide, 1978; Hoferek, 1978; Knoppers, 1980; Spears, 1979). However, male physical educators are also influenced by their sport experience and as Hoferek (1978) and Sage (1980) pointed out, their sport experience may serve to reinforce traditional masculine expectations for themselves and their relationships with females. Since most administrators and those in positions of power in physical education departments are

male (Hoferek, 1980), the possibly androgynous advantage of female physical educators may be eliminated by the conservative departmental climate. It seems, therefore, that with respect to productivity, female physical educators have little or no advantage over women in other academic areas.

The universality of gender differences in productivity seem to suggest that higher education harbors factors or structural barriers which affect most female academicians, including those in physical education. The remainder of this discussion will, with the use of data in the current study, focus on those structural barriers possibly related to productivity which most female physical educators are likely to face within higher education.

Differential treatment in graduate school may be one such structural barrier which includes such factors as the prestige of the school and the gender of advisor and of role models available to students. Helmrich et al. (1980) reported that their male subjects had obtained their doctoral degrees from more prestigious graduate programs than women. In addition, males were more productive and cited more often than females. One hallmark of the degree of prestige of a graduate program is the number of publications by faculty members (Cox & Catt, 1977; Hasbrook & Loy, 1983; Scully, 1979). Subsequently, prestigious departments tend to expect a higher degree of productivity from their faculty who in turn are likely to encourage and to provide many opportunities

for their students to participate in research projects. Thus, if fewer females than males receive their doctoral degrees from prestigious departments, then it seems likely that fewer females than males will be involved in their mentor's research projects with a corresponding decrease in opportunities for productivity.

Women who do attend the more prestigious universities will be faced with a serious lack of same sex role models and potential advisors. Hoferek (1979) reported that fewer female than male physical educators had obtained doctoral degrees. This fact was also substantiated by the AAHPERD membership data in the current study. These data showed a total of 2321 physical educators with a doctoral or post doctoral degree of whom 40% were women and 60% were men. In addition, Ashcraft (1973), Fallon (1973), and Hoferek (1979) also found that of those female physical educators with doctoral degrees, few work and teach in universities and fewer still teach graduate courses and advise graduate students. This scarcity of females and abundance of males may have a serious long term impact on the productivity of women in physical education, especially in light of the finding by Menges and Exum (1983) that the productivity of female academics was greater for those who had female rather than male dissertation advisors. Thus the lack of female graduate advisors may negatively affect female graduate students in physical education who do not have same sex advisors.

One could argue, however, that if male faculty members publish more articles than females, the men's advisees would then also be likely to publish more. Thus both sexes should have the same number of opportunities to publish and to be secondary authors. Fallon (1973), however, reported that prior to doctoral graduation 46% of the men had published at least one article but only 33% of the women had done so. Similarly, in the current study the data showed that there were significantly more male than female secondary authors. Aker (1977) speculated that faculty members may give women less encouragement and fewer opportunities than they give men because women are often seen as less serious about their careers than men. Therefore the differential treatment that women experience in graduate school may have a negative impact on future levels of productivity.

The second structural barrier which may result in gender differences in productivity is the "old referees' network." This barrier includes androcentric definitions of scholarship and male gatekeepers to journals and was indirectly substantiated by the results of the current study. Manuscripts authored by women represented 49% of the published articles in Quest. This percentage was higher than that for any other journal. Quest also had the strongest representation of women on its editorial board. Similarly Motor Skills: Theory into Practice also had strong female representation on its editorial board as well as a

female editor each of the five years, yet published a lower percentage of manuscripts authored by women (37%). However, when this percentage was examined within the context of the other 18 journals, Motor Skills: Theory into Practice had the third best publishing record of female authored manuscripts, ranking behind Quest (49%) and Arena (48%). The Journal of Sport Behavior did not have any female representation on its editorial board during the five year time period examined; articles written by female authors represented only 19% of the total number of articles published in that journal. Thus, journals which had strong female representation on their editorial boards had better records in publishing female authored research in physical education.

This may be partially explained by the fact that higher education has been dominated by white males and therefore their definitions of scholarship, or knowledge may also prevail. Female scholars have contended that definitions of scholarship by white males are incomplete or are in need of revision because they do not include women's experiences, interests, and perspectives (Birrell, 1983; Hall, 1979). Female scholars who focus on such topics are often perceived as a threat to their senior male colleagues (Menges & Exum, 1983), are not taken seriously, or often times are simply ignored. Each of these responses on the part of male colleagues will have negative consequences for a woman's opportunity to publish. Research that is ignored or not

taken seriously will certainly not be published in mainstream professional journals which, in the case of the field of physical education, are primarily controlled and operated by white males as the data show. This phenomenon is also known as the "old referees' network." Even though blind reviews supposedly prevent individual bias, editorial boards and referees who are presented with manuscripts that are outside of the accepted definitions of knowledge, such as articles written from a feminist perspective, may reject those manuscripts instead of allowing them to be reviewed for publication. It stands to reason that journals having strong feminist representation on their editorial boards should have a better record in publishing female research and that seems to be the case in this study.

A third barrier affecting the productivity of female physical educators may be the lack of an available support network. Safrit (1984) stressed the need for mentors for women in higher education because mentoring seems to be significantly related to publication rate, grants received, collaboration rate, and network involvement. Women tend to be isolated from the "old boy network" where a great deal of information is informally communicated. Men tend to develop more connections both inside and outside of the university and have greater access to high status individuals (Menges & Exum, 1983). In the current study, the second sub-question was related to this particular barrier facing academic

women. Because women tend to be isolated from the "old boy network" and because these communication links appear to be related to productivity in ways such as grants and collaboration, it was hypothesized that the majority of women who were involved in publication would not be in positions of primary authorship but would be secondary authors with men who had access to the "old boy network." This did not prove to be the case. There was no significant difference between the percentage of women who were primary versus secondary authors. It appears that the lack of a strong support network for women limits productivity in each aspect. The lack of secondary authorship by women showed that they may lack mentors of either sex. Therefore, female faculty members should work to establish mentoring and collaboration partnerships which will improve contact networking among women.

The final barrier, that of workload, is not directly linked to data collected for this study. It must be mentioned however, because it has a definite effect on the productivity of physical educators. Fallon (1973) reported that females in the field of physical education who obtain a doctoral degree tend to be hired into jobs well below their qualifications and aspirations. This is reflected in statistics that show that female physical educators tend to teach activity classes rather than professional undergraduate and graduate level courses and, therefore, have heavier teaching loads than male physical educators (Ashcraft,

1973; Fallon, 1973). Physical education activity classes are usually not worth as many credits as professional lecture courses and therefore activity class instructors may have to teach three or more classes per day to "equal" one lecture course. In addition, women also tend to serve on more committees than men (Ashcraft, 1973). Not only do female academics have greater professional time commitments but they also tend to have more household and family responsibilities than do male academics (Hochschild, 1974; Villadsen & Tack, 1981). Thus, relative to men, very little time may be available for women to engage in scholarly research.

These four structural barriers to female productivity face all women in academia, including those in physical education. These barriers by no means exhaust the list of potential factors that may inhibit productivity and thereby the professional advancement of female academics. There are other factors that have already been addressed such as marital status and the presence of children. Another factor that has not been discussed and should be considered in future research is affiliation with research institutes and laboratories. This factor may be of particular importance for individuals in the field of physical education. Researchers who are affiliated with institutes and laboratories may have greater access to grant monies, facilities and other resources, collaboration, and involvement than do

individual researchers. It may very well be that more male than female physical educators are associated with research institutes and laboratories where research is conducted which focuses on components of physical performance. Thus, individuals who would be associated with research institutes and laboratories would tend to represent sub-disciplines, such as exercise physiology and biomechanics, that measure physical performance. Results from this study showed that male authors tended to dominate the physical sciences, whereas, the majority of female authors were in the social sciences. Therefore more male physical educators may work in a climate conducive to productivity.

In conclusion, efforts that have been made by women in other fields and suggestions for physical educators to overcome these barriers should be examined. Journals such as Signs, Sex Roles, and Psychology of Women Quarterly have been established in the parent disciplines as a means to provide publishing opportunities for manuscripts focusing on women and/or feminist issues. Currently there are no such journals within the field of physical education. The availability of such a journal might help to alleviate the effect of male gatekeepers. Yet, although such a journal may provide more publishing opportunities for women in physical education, and therefore would make knowledge that was previously unpublished accessible, its existence would not challenge the male gatekeeper issue. Women should have

opportunities to publish in mainstream journals within the field of physical education. These are the journals that have the greatest readership and are held in the highest professional esteem. Publication in mainstream journals will help redefine current definitions of knowledge to include women's experiences and perceptions (Spender, 1981). For such publication to occur, however, editorial boards must consist of more women and/or those who are open to new definitions of knowledge.

A second suggestion that could help to improve female productivity is effective mentoring. Women and men who are currently serving as graduate advisors must be willing to give their female advisees the same opportunities and encouragement that they give to male advisees. In addition, senior female faculty members should be particularly mindful of junior female faculty members and should be willing to serve as professional mentors. This may help to establish contact networking and collaboration among women. Such mentoring will increase most in effectiveness if there is a corresponding increase in the number of female academics. Thus, administrators need to actively recruit more women into university graduate level positions to alleviate the serious shortage of adequate female role models and advisors. Administrators need to be re-educated concerning the biases that may prohibit the productivity of female academics. Such re-education, however, should not be limited to

administrators. All physical educators, especially males, need to be educated in the ways in which biases tend to inhibit the productivity of women. They need to confront the extent to which they help to perpetuate the structural barriers which are not conducive to a high rate of productivity by female academicians.

This study has focused on scholarly productivity because this type of productivity has been given top priority in comparison to the other criteria by which educators are usually rewarded. The ranking of these criteria is an issue which impacts all faculty members and needs reexamination. Perhaps excellence in teaching and service should be valued as high as, if not higher than, scholarly productivity in the evaluation of faculty members.

In summary, the data in this study indicated that men were significantly more productive than women in the field of physical education. There were significantly more male primary authors than female primary authors and significantly more male secondary authors than female secondary authors. The difference between the number of female primary versus secondary authors as well as between the number of male primary versus secondary authors was not significant. Female and male physical educators did tend to cluster into particular sub-disciplines as Safrit (1979) suggested. Finally, women were under-represented on the editorial board of most professional journals within the field of physical education. Journals which had the greatest female representation

on their editorial boards also published more manuscripts authored by women.

Several factors limit the results of this study. First, the significance of the gender differences in productivity was based on the number of women and men in the field of physical education. Membership data were only available for 1983-84 yet productivity data were collected for five years. Therefore, the accuracy of the AAHPERD membership data in estimating the number of female and male physical educators limits the accuracy of the results. Second, the analysis was limited to refereed journals within the field of physical education. Because of this factor, there were very few articles representing the sub-disciplines of health and recreation. Physical educators who specialize in these areas apparently publish in journals specific to those fields. Finally, analysis of gender differences in productivity within specific sub-disciplines was limited to motor performance and sport psychology because other sub-disciplines did not have formal organizations with membership directories which were needed to estimate the number of women and men in each sub-discipline.

Suggestions for Future Research

Future investigators may find it beneficial to focus on productivity from a different perspective. This study defined productivity in a strictly quantitative way in order to generate a global view of the amount of productivity by women and men within

the field of physical education. Researchers investigating elements of productivity should attempt to determine the identity of the authors who are conducting the research. Results from this sort of investigation could determine whether the majority of research is being conducted by a limited number of individuals or whether many physical educators are involved in scholarly productivity.

Second, future researchers may wish to replicate and expand Safrit's (1979) study in which she investigated the number of manuscripts that were submitted to Research Quarterly by gender for a one year period. Perhaps women and men submit similar numbers of manuscripts but more women's manuscripts are being rejected by the "old referees' network."

Finally, because of the emphasis on a global look at productivity in the field of physical education, this study was quantitative in nature. Future research that is qualitative in nature could examine the extent to which structural barriers limit the productivity of female physical educators. It may be that certain barriers are more inhibiting than others or have more of an impact than others. Research that is qualitative could also provide for an indepth analysis of the awareness of physical educators concerning productivity differences and to what they attribute those differences.

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Footnotes

[1]AAHPERD membership figures may have inflated the number of physical educators who were in positions where scholarly productivity was expected because those figures included individuals teaching in four year colleges and/or those teaching at the undergraduate level.

[2]There are several specific areas encompassed in the broad title--Motor Performance and those areas include motor learning, motor development, and motor performance. This study has included all specific areas under the title "Motor Performance."