

The Effects of Applicant Age and Academic Achievement in Screening Decisions for the Employment of Secondary Teachers: A Re-examination Using a Comparative Decision Model

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Studies of administrators evaluating single hypothetical candidates at the screening stage of the teacher selection process have found that older candidates are evaluated lower than younger candidates, regardless of experience and other variables studied. External validity of these earlier studies was threatened because administrators usually assessed multiple candidates for a single position. In this study resumes of four hypothetical candidates with age and undergraduate grade point average (GPA) varied were reviewed by a national random sample of secondary principals. When age was held constant, GPA had a direct impact. When GPA was held constant and age was varied, no significant preference (direct impact) was found for age. However, an indirect impact for age was found because a 29-year-old candidate with a higher GPA was deemed to be significantly more acceptable than a 49-year-old candidate with a lower GPA, but this was not true when the 49-year-old candidate had the higher GPA. The disparate impact of age in employment decisions remains a complex critical issue. The finding of indirect impact for age coupled with GPA may indicate a more indirect bias than earlier studies have identified. More studies utilizing this methodology may help to illuminate subtle biases which may influence administrators.

Teacher selection is extremely important to future students who are impacted by the selection process. Additionally, from the administrative aspect, if the annual salary is projected over the full lifetime of the average teacher, the selection decision could be thought of as a million dollar decision. The objectives of this study were to identify the presence or absence of the direct and/or indirect impact of certain variables during the paper screening phase of employment procedures for secondary school teachers, and to examine the external validity of microanalytic methods employing a methodology which was closer to the situations in which decisions were actually made than had been common in previous studies of this nature. The study also sought to expand existing literature in the area of the influences of chronological age, gender, and academic achievement (grade point average or GPA) in employment decisions for teachers.

Theoretical Framework and Related Studies

Dipboye (1992) noted that the market was already glutted with "how to" books designed to assist in the selection of the best people. He also noted that "the greatest strides in improving selection... come from an understanding" (Dipboye, 1992, p. 8). This study will add to the knowledge base and understanding by expanding microanalytic research--one of the two major empirical approaches (macroanalytic is the other approach).

A number of previous studies focusing on employee selection have been labeled macroanalytic because they have used descriptive correlational techniques to assess predictors of job performance. The job interview has most often been the medium for doing such analysis; however, macroanalytic research has insufficient controls and has produced disappointing validity coefficients. Because of these problems with the macroanalytic approach, Mayfield (1964) recommended a change in the direction of selection

research to a more microanalytic approach.

Microanalytic procedures have generally involved experimental settings and inferential statistics and have separated the selection process into components (or stages of decision making). The separation has allowed researchers to assess whether the medium in which information is collected makes a significant difference. It was assumed in some early studies that information gathered in one setting or stage was generalizable to another setting or stage. Young and Pounder (1985) offered support for earlier private-sector research (e. g. Gorman, Clover, & Doherty, 1978) that indicated that the medium was significant, and therefore findings were not generalizable from one setting or stage to other settings or stages (e. g. paper screening stage vs. interview stage). Pounder found a significant difference in "the medium of information transmittal (written versus audiovisual)" (1987, p. 55).

Imada and Hakel (1976) also found that how information was obtained made a difference as they examined proximity of the interviewer (live interviewer, live observer, or video-taped) and levels of nonverbal communication (immediate or nonimmediate). In their discussion they state "the manner in which the information is collected and perceived may be distorted by pressures to come to a decision" (Imada & Hakel, 1976, p. 299). Carlson found that the situation or context (applicants presented as a group or individually) made a difference in terms of "a consistent effect due to administering the applicants as a group. The effect shows itself in greater consistency, stability, inter-rater agreement, and conservative evaluation behavior" (1968, p. 206). It has appeared that teacher selection research would be enhanced if the significant situation or context is considered when designs are developed. This study is an attempt to move teacher selection research in the direction of including more of the situation or context that is involved when school officials make these important decisions.

Since the mid-1970's, several studies have explored the effects of age and academic achievement on screening decisions made by school officials with regard to employing teachers. Johnson (1976) conducted a survey of school administrators to determine preferences in selecting candidates for interviews. Newby (1994), Wallich (1984), Young and Allison (1982), Young and Joseph (1987), Young and McMurry (1985), Young and Rinehart (1989), as well as Young and Voss (1986) used a technique of having school administrators rate a single candidate with regard to screening decisions--selection for an interview. Half of the administrators reviewed the credentials of a candidate who was 29 years old; the others reviewed the credentials of a candidate who was 49 years old. Comparisons of the ratings were made. An eighth study conducted by Young and Schmidt (1987) utilized hypothetical credentials with a nearly identical technique but added a third age level (40).

With regard to age, all of these studies, except Wallich (1984), found age to be a significant factor (or as Newby, [1994] found, age was part of a significant interaction).

Older candidates were systematically evaluated lower than younger candidates. Young & Allison (1982) found this disparate impact persisted regardless of candidate experience (none, 3 years, or 8 years) or the role of the person completing the evaluation (principal or superintendent); however, Newby (1994) expanded that 1982 study, which was limited to four mid-western states, to a national sample. Instead of only a main effect for age found by Young and Allison, Newby found a significant three-way interaction of candidate age, candidate experience, and the role of the person completing the evaluation. Specifically, only superintendents rated 49-year-old candidates with eight years of experience lower than 29-year-old candidates with eight years of experience (Newby, 1994).

In other studies age persisted as a significant factor influencing selection decisions regardless of factors such as the recency of degree completion--skill obsolescence (Young & Joseph, 1987); level of employment being sought (elementary or secondary [Young & Schmidt, 1987]); and the quantity of information provided (brief reference section of resumes that included names only vs. complete reference section of resumes that included comments from references [Young & Voss, 1986] as well as short recommendations--60 words vs. long recommendations--180 words [Young & McMurry, 1986]).

The mostly consistent findings of the above mentioned experimental studies do not exhaust the issues and variables that have been and should continue to be examined. Other variables have been found to interact significantly with candidate age, confounding the interpretation of these findings, so that it is not possible to make a simple statement that candidate age is in all cases of significant direct impact. Specifically, GPA was examined by Young and McMurry (1986) and Young and Joseph (1987). Focal position was examined by Young and Joseph (1987), Young and McMurry (1986), Young and Rinehart (1989), as well as Young and Voss (1986). Candidate gender was examined by Young and Schmidt (1987). In spite of the complexity of various interactions and issues addressed, in each of these cases candidate age was involved as a significant factor in the interpretation of the research.

Two of the studies, Young and Joseph (1987) and Young and McMurry (1986), examined the influence of candidate age and the influence of academic success as represented by GPA. These studies in essence tested for possible direct and indirect impacts with GPA functioning as an additional variable of interest and a possible intervening variable. A direct impact is established when a significant preference is found in selecting candidates where one variable is held constant for both levels (or conditions) of the second variable (testing for the impact of age by holding GPA constant--comparing low GPA 29-year-old candidates with low GPA 49-year-old candidates). An indirect impact is established when a significant preference is found in cross comparisons of the two variables (comparisons where neither variable is held constant).

Young and McMurry (1986) used a 2 x 2 x 2 x 2 factorial design (age x focal position x quality of information x quantity of information). "An effect was detected for the quality of candidate stimuli and for the chronological age x focal position x quality interaction" (Young & McMurry, 1986, p. 6). While the interaction made these results more complex, some conclusions were possible by holding the focal position constant. A direct impact was found for age when the focal position was chemistry teachers and when the GPA was held constant at 2.68. (When two candidates were of different ages and both had a low GPA, preference was given to the younger candidate). They also found an indirect impact for age because in the first of two cross comparisons, when younger chemistry candidates with higher GPA's were compared with older chemistry candidates with lower GPA's, the younger candidates were given higher ratings; however, in the other cross comparison, when older chemistry candidates with higher GPA's were compared with younger chemistry candidates with lower GPA's, no significant preference was found.

Young and Joseph (1987) used a 2 x 2 x 2 x 2 factorial design (age x skill obsolescence x quality of candidate stimuli--GPA x focal position). Skill obsolescence, while significant, did not interact with the other variables examined by Young and Joseph (1987). The interactions of the other three variables again made these results complex, but some conclusions were made possible by holding the focal position constant. Interestingly, Young and Joseph (1987) also found that the impact for age was dependent on focal position (area of teaching); however, as to which focal position was relevant, they found the opposite of Young and McMurry (1986). Specifically, such impact did not exist for chemistry teachers; but it did for physical education teachers.

Young and Rinehart (1989) recognized the complexity of these issues and attempted to examine the impact of focal position in relation to two specific focal positions with different activity levels found to be attributed to each focal position (physical education--high activity level and physics--low activity level). Young and Rinehart (1989) state:

These findings indicate that age discrimination is the result of an interaction between person by position characteristics. Stereotypes about older individuals interact with perceived activity of a focal position to yield a disproportional impact for older physical education candidates at the screening stage of the selection process. (p.12)

Two of the studies, Wallich (1984) and Young and Schmidt (1987), examined the influence of candidate age and the influence of candidate gender. Wallich (1984) did not find a significant main effect or interaction for candidate age and candidate gender; however, Young and Schmidt (1987) found a significant interaction of candidate gender and candidate age.

Newby (1994), Wallich (1984), Young and Allison

(1982), Young and Joseph (1987), Young and McMurry (1985), Young and Rinehart (1989), as well as Young and Voss (1986) relied on a methodology in which a single administrator evaluated a single candidate for a specific position. This approach is restrictive and raises questions as to whether the findings could be, at least in part, an artifact of a methodology. That is, was the methodology too microanalytical? In reality, screening processes involve multiple candidates. In order to validate or contradict earlier findings and to overcome the limitations of those efforts, it was necessary to duplicate the theoretical framework, but to do so with the evaluators examining the resumes of multiple candidates.

These experimental studies have excellent internal validity and very clean methodology which allow the reader to get a clear understanding that candidate age has had a significant impact on some administrative decisions; however, there may be factors which in practice make the actual administrative decisions more complex. For example, screening decisions are not made under experimental conditions that control or hold constant other variables which could intervene or confound the effects found for chronological age. Nor are these decisions made about individuals in isolation. They are made in comparative situations where individuals are compared so as to narrow the number of candidates to be interviewed. This real life comparative situation makes the study of screening decisions very complex. Dipboye (1992) discusses knowledge structures, cognitive categories, and schemas as helpful in understanding selection decisions. Specifically, he states that "broad categories are the most likely to influence perception of another when there is very little information on the other" (Dipboye, 1992, p. 23).

To determine the significance of age, academic achievement, and gender with regard to administrator preferences in selecting candidates this study re-examined the screening process; however, this study utilized a comparative situation where more than one hypothetical candidate was evaluated. In other words, still utilizing the microanalytic approach and the same procedures as previous studies, the administrators rated applicants in a group, not individually. Therefore, the administrators were able to compare or contrast the individual evaluations of candidates which is a situation or context closer to the typical situation or context that is actually involved when school officials make teacher selection decisions.

Methodology

In assessing candidates in the real world of practice, school administrators usually assess multiple candidates for a single position. In an effort to improve on the methodology of the eight previous microanalytic studies, participants in this study were asked to review the resumes of four hypothetical candidates. The participants were secondary school principals randomly selected on a national

basis. Each participant received a cover letter which provided instructions, a general explanation of purpose, a promise to share the results, and a statement of thanks. In addition, there was a pre-addressed stamped envelope and a self-biographical form which asked for information about the school, the birth date, the administrative experience and the gender of the participants.

In order to provide a common frame of reference, a position description (for a chemistry teacher) was also included. Each participant received four sets of credentials (which included resumes and two references for each hypothetical candidate) and four evaluation forms mixed as follows: Candidate A--29 years of age and a GPA of 2.68; Candidate B--29 years of age and a GPA of 3.50; Candidate C--49 years of age and a GPA of 2.68; Candidate D--49 years of age and a GPA of 3.50. The sex was not varied in any set, i.e., each participant received four sets of credentials for candidates of the same sex. An equal number of male and female sets were distributed in the study. Half of the participants received a set of male candidates, while the other half received a set of female candidates.

This study used the same dependent variable used in previous studies (see, for example, Young & Joseph, 1987; Young & McMurry, 1985; Young & Pounder, 1984; Young & Rinehart, 1989; Young & Voss, 1986). Specifically, a composite of six items listed on the evaluation forms was used, i.e., curricular knowledge, communication skill, discipline ability, classroom management, growth potential, and overall school contribution. Measures of internal consistency have been reported as: .83 from Young and McMurry (1985, p. 6); .78 from Young and Voss (1986, p. 37); .80 from Young and Rinehart (1989, p.10). When the internal consistency of the same measures utilizing the data in this study was analyzed with a Cronbach alpha, a coefficient of .88 was obtained.

cient of .88 was obtained.

Pounder (1987) also used the same dependent variable and found that a Cronbach's alpha of .84 and a concurrent validity coefficient of .62 (a correlation of the composite score with a 'hire/not hire undecided' recommendation) were very similar to that reported in related teacher selection studies in which the evaluation instrument had been repeatedly used and validated (1987, p. 55). A measure of the concurrent validity utilizing the data in this study was a correlation of the composite score with an overall estimate of the chance of being interviewed (on a scale of 1 to 10; a 1 being a poor chance to a 10 being an excellent chance). The results supported Pounder's finding of concurrent validity, because a correlation coefficient of .68 was obtained with the data in this study.

A between-within fixed effect analysis of variance was used to analyze the data. The analysis of the between-subjects variable of gender was straightforward, but the analysis of the repeated measures variable of resume condition included both age and GPA. Therefore, analysis was completed for age and GPA by examining three sets of two pairings, a total of six pairings (see Table 1).

In the first set of pairings, age was held constant and the GPA varied (thereby assessing the direct impact of GPA). In the second set of pairings, GPA was held constant and the age varied (thereby assessing the direct impact of age). In the third set of pairings, both age and the GPA were varied (assessing the indirect impact of age and GPA by examining the two pairings concurrently).

Results

Usable assessments of the candidates were returned by 104 secondary principals. The return rate for usable re-

Table 1
Comparisons of the Impact of Grade Point Average (GPA) and Chronological Age on Applicant Age

Direct impact of GPA comparisons		
(1) Age 29, GPA of 3.5	with	Age 29, GPA of 2.68*
(2) Age 49, GPA of 3.5	with	Age 49, GPA of 2.68*
Direct impact of Age comparisons		
(3) Age 29, GPA of 3.5	with	Age 49, GPA of 3.5
(4) Age 29, GPA of 2.68	with	Age 49, GPA of 2.68
Indirect impact comparisons		
(5) Age 49, GPA of 3.5	with	Age 29, GPA of 2.68
(6) Age 29, GPA of 3.5	with	Age 49, GPA of 2.68*

*Significant comparisons using Tukey's Honest Significant Difference test. A familywise error rate of .05 for all comparisons ($N = 6$) was maintained.

Table 2
Analysis of Variance for Principals' Composite Ratings of Candidates

Source	df	Mean Square	F
Between			
Sex of Candidate	1	10.47	.74
Evaluator/Sex	102	14.07	
Within			
Resume Condition (RC)	3	35.15	6.21*
Sex x RC	3	3.24	.57
RC x Evaluator/Sex	306	5.66	

* $p < .05$

sponses was 36%. This rate of response for the 104 principals provides sufficient statistical power for the detection of a medium effect as described by Cohen (1977).

This return rate is less (although for purposes of statistical power the repeated measures more than makes up for lower numbers) than other microanalytic teacher selection studies. Some return rates for others were as follows: 43% for Newby, 1994; 61% for Young and Allison, 1982; 62% for Young and Joseph, 1987; 63% for Young and McMurry, 1985; 66.3% for Young and Schmidt, 1987; and 73.8% for Young and Voss, 1986. These rates must be considered, however, in light of the fact that each participant in this study was asked to evaluate four times as many candidates with hypothetical paper credentials as participants in the studies cited above were asked to evaluate.

Given the busy schedule of school administrators, it is not surprising that when asked to participate in research that required much more of their time and energy, a number of the respondents failed to comply with the request. The salient question is, "Was there a self-selection effect or some difference between these respondents and those in earlier studies with higher return rates?" Some demographic variables (school setting--urban, suburban or rural; gender of administrators; or experience of administrators) indicate that the samples have similar characteristics. It is, therefore, reasonable to speculate that the length of time required might have caused a lower response in this study compared with the earlier single candidate microanalytic teacher selection studies.

A between-within fixed effect analysis of variance was used. No significant difference was found in the analysis of the between-subjects variable of gender; however, the resume condition was significant (see Table 2). The examination of the comparisons within resume condition (see Table 1) is therefore relevant.

For both the 29-year-old candidates and the 49-year-old candidates, a significant preference was shown for

higher GPA's (see Table 1). Thus, academic achievement was found to have a direct impact. In the second set of comparisons, GPA was held constant and age was varied. Here no significant preference was found. Thus, no direct impact for age was established. In the third set of comparisons, the presence of an indirect impact for age was found in that one of the two comparisons was significant. The 29-year-old candidate with a GPA of 3.5 was deemed to be significantly more acceptable than the 49-year-old candidate with a GPA of 2.68.

Discussion

The results of this study do not offer support for the earlier finding that age alone has a direct impact on screening decisions for teacher employment. The results do exhibit a direct impact for academic achievement as measured by GPA and an indirect impact for age coupled with GPA when a younger/higher GPA candidate is compared with an older/lower GPA candidate. This indirect impact is a more subtle effect than the direct impact found in some earlier studies which utilized a methodology of having a single administrator evaluate a single hypothetical candidate. The subtle finding may be a function of a decision making process that forces comparisons to be made. That comparative process is what administrators utilize in their decision making. The schemas and knowledge structures that are activated may be influenced by the situation under which the decision is made, e. g., rating one candidate vs. rating multiple candidates.

The findings of this study are important because while failing to support earlier findings of direct impact for age, the finding of indirect impact for age coupled with GPA provides support for earlier findings indicating significant preference for younger candidates. Together, the findings of this study and earlier findings indicate a need for more studies utilizing this methodology. The potential disparate

impact of age in employment decisions remains a critical legal and professional issue. This study illuminates the complexities of studying the direct and indirect effects of this variable. Most importantly, the methodology employed provides a novel dimension to pursuing microanalytic studies in this area. While it may lead to lower returns rates, it may well add to our knowledge of the actual intricate nature of the teacher selection process.

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