



# The effectiveness of mentoring programs in corporate settings: A meta-analytical review of the literature<sup>☆</sup>

Christina M. Underhill \*

*The University of Memphis, USA*

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## Abstract

Many studies over the last 20–25 years have examined the benefits of mentoring for the protégé and the organization. A review of these studies being published revealed that there is not only a lack of studies utilizing or reporting comparison group information but also a general lack of experimental research about mentoring. This quantitative meta-analytic review provides a critical analysis of the effectiveness of mentoring, with an emphasis on research designs that compared career outcomes of mentored individuals to non-mentored individuals. The overall mean effect size of mentoring was significant, indicating that mentoring does improve career outcomes for individuals. Individual career outcomes were analyzed and reported. Informal mentoring produced a larger and more significant effect on career outcomes than formal mentoring. There is a need for more research comparing protégés and non-protégés to determine if it is the receipt of mentoring or individual characteristics that leads to career success.

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*Keywords:* Mentor; Protégé; Mentoring; Career outcomes; Informal mentoring; Formal mentoring

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\* Fax: +1 901 874 2570.

E-mail address: [wdrwoman@bellsouth.net](mailto:wdrwoman@bellsouth.net).

## 1. Introduction

### 1.1. Purpose

The purpose of this review is to provide a quantitative summary of the effectiveness of mentoring in the workplace. There has been a wealth of published information on mentoring since the most recent critical review in 1983. Since then, however, there has been no scholarship published that provides a serious evaluation of the mentoring research being conducted. This review provides a critical analysis of the results of mentoring research, emphasizing those research designs that compared career outcomes of individuals who received mentoring to those who did not. As mentoring likely has important implications for both career and organizational outcomes, it is crucial to understand the extent of the relationship mentoring has with desired outcomes while accounting for the effects of other potential confounding variables. Focusing on studies with comparison groups will provide a more solid foundation upon which to assess the effect mentoring has on improving a person's career outcomes.

### 1.2. Background on mentoring research

In 1983, Merriam published the first critical review of the literature on mentoring. At that time mentoring was believed to create success in the career of the protégé, but this belief was not readily substantiated by research at the time. Mentoring studies were scattered across disciplines and had not been examined to identify common findings and trends (Merriam, 1983). Since then mentoring has continued to be a popular topic in business and education. A search, of the most relevant scholarly databases for articles since 1983, yielded hundreds of articles. Over a hundred articles regarding mentoring adults in the workplace were obtained and classified into the type of research conducted.

### 1.3. Current state of mentoring research

The majority of the studies or 60% were based strictly on descriptive self-report survey results. The reported survey response rates after adjusting for missing survey data ranged from 10 to 91%. Overall, the studies averaged a 50% response rate. Twenty-six (24%) of the mentoring studies were not research articles but theoretical conceptualizations or reviews of topics in mentoring. Five studies (5%) were based solely on interviews. Five (5%) articles reported results of longitudinal quasi-experiments with either a pretest–posttest measure or posttest only measure with a non-equivalent control group. Four (4%) of the studies were strictly case studies describing the establishment of mentoring programs, and only three studies involved random assignment to a mentored and non-mentored condition. Of these studies reviewed, less than 22% compared the characteristics and career outcomes of mentored versus non-mentored individuals. The lack of articles comparing mentored to non-mentored individuals is disconcerting when considering the inferences that have been made regarding the influence of mentoring on career outcomes.

#### 1.4. Problems with studies not utilizing comparison groups

Much of the research regarding over the last 20 years has focused on the positive outcomes of mentoring and how these outcomes relate to mentoring functions such as career development and psychosocial support. However, in most cases it is impossible to tell whether these outcomes were actually the result of the mentoring itself or other confounding variables for which the study has not accounted. Many of the articles claimed that mentored individuals have numerous career benefits without examining whether or not non-mentored individuals had similar or different outcomes. The process of comparison is essential to scientific inference. Without a comparison group of non-mentored people, it is more difficult to confidently attribute these career benefits to mentoring alone.

Most of the studies selected for this meta-analysis present descriptive survey results. Only one was a longitudinal survey (Chao, 1997) and one was a quasi-experiment with post-test non-equivalent control group (Seibert, 1999). A major limitation to survey results is their inability to determine cause and effect. These surveys are mainly descriptive research based on self-reports of career success in which the authors explore the relationship or association between mentoring and career outcomes. They provide no independent variable manipulation and therefore do not provide enough information to eliminate rival explanations of the relationships (Singleton & Straits, 1999). Surveys that present the results of comparison groups provide a stronger inference of mentoring's influence on career outcomes. These studies still cannot fully attribute mentoring as the cause of improved career outcomes, but they do provide stronger connections than correlational studies that only look at mentored individuals' career success. Since there exists very few published experimental research on mentoring, analyzing survey results of comparison groups is the best choice in quantifying mentoring's relationship to career outcomes. This meta-analysis only analyzes articles that report information from both mentored and non-mentored individuals.

In 2004, Allen, Eby, Poteet, Lentz, and Lima published the first meta-analysis on the career outcomes of protégés associated with career and psychosocial mentoring functions. The researchers separately analyzed two types of studies, those that compared mentored individuals with non-mentored individuals and those that only examined the relationship between mentoring and its outcomes without a non-mentored comparison group. The career outcomes analyzed for each group were classified as subjective or objective. Objective outcomes were tangible indicators of success such as promotions and compensation. Subjective measures of career outcomes consisted of intangible and affective indicators such as job satisfaction, commitment, and turnover intentions. A total of 43 studies were included across their separate analyses, and most of these were included in the analyses of articles that did not compare outcomes of non-protégés. Two-thirds of our respective articles with comparison groups overlapped in our separate meta-analyses. There were five articles that were included in my current meta-analysis that were not included in Allen, Eby, Poteet, Lentz, and Lima's (2004). I coded five additional career outcomes that were not included in the Allen et al. analysis (e.g., self-esteem, perception of

alternative employment opportunities, tenure in an organization, work stress, and work–family conflict). There was only one outcome reported in Allen’s analyses of comparison group articles that was not found in my article search, which was satisfaction with one’s chosen career (see Table 1 of Allen et al., 2004). This meta-analytic review differs in that it provides more career outcomes associated with mentoring while critically evaluating the methods of mentoring research with an emphasis on the importance of more rigorous designs and reporting information.

## 2. Method

### 2.1. Literature search

A total of 106 articles from 1988 to 2004 were obtained and reviewed. Articles were found via computerized search of the topic areas in which mentoring and mentoring research is common such as law enforcement, nursing, education, business, and psychology. The search was narrowed using the terms mentor, mentoring, and protégé as keywords in the title or abstract. Reference lists from recent articles were also used to locate the more commonly cited articles in mentoring research. The studies were evaluated on the basis of research design, type of participants, use of a comparison group, and sample size.

### 2.2. Study inclusion criteria

This analysis was conducted only on research articles that reported results from an experimental, quasi-experimental, or survey design that utilized a control or comparison group that received no mentoring. Published and unpublished articles, dissertations, government reports, conference proceedings, and technical reports were considered for inclusion. Articles written in a language other than English were excluded due to translation difficulties. Only studies conducted after Merriam’s (1983) literature review were eligible for inclusion because two conclusions of that review were (a) overall the studies prior to 1983 lacked a cohesive and common definition of mentoring, and (b) they lacked solid experimental designs evaluating the effectiveness of mentoring.

Eligible mentoring studies were those that used a definition of mentoring that included either formal or informal mentoring by a more tenured individual in an organization to a less experienced protégé. Because the focus of this analysis was on individuals already participating in the workforce, studies that evaluated mentoring as part of an educational training program were not included. Teen mentoring was excluded from this study as a topic outside of adult mentoring in organizations. Peer mentoring was also excluded because it involves a more equal experience level in the mentoring relationship.

Eligible studies must have had at least one outcome measure comparing protégés to non-protégés previously cited in the mentoring literature. These coded outcomes included organizational commitment, intent to stay, job satisfaction, tenure with the

organization, number of promotions, self-esteem, perceived alternative employment options, income, work stress, work–family conflict, and promotion or career opportunities. These studies had to provide information such as group means, standard deviations, and sample sizes for calculating the standardized mean differences between the two groups.

There were 23 articles that compared protégés to non-protégés, but only 14 were eligible for inclusion in the meta-analysis. Two articles, [Ragins, Cotton, and Miller \(2000\)](#) and [Ragins and Cotton \(1999\)](#) were based on the same data. Two other articles, [Fagenson \(1992, 1994\)](#) were also based on the same data. The results from these initial data collections were combined as one study each for this meta-analysis. Seven studies did not provide enough information to obtain effect sizes, [Baugh and Scandura \(1999\)](#), [Evertson and Smithey \(2000\)](#), [Fagen \(1988\)](#), [Ragins and Scandura \(1999\)](#), [Ritchie and Genoni \(2002\)](#), [Scandura \(1997\)](#), and [Walsh, Borkowski, and Reuben \(1999\)](#).

### 2.3. *Statistical procedures*

Effect sizes were calculated with a program developed by [Shadish, Robinson, and Lu \(1999\)](#). Hedges' correction ([Lipsey & Wilson, 2001](#)) for small sample bias was applied to all effect sizes before further analyses were conducted. Multiple effect sizes per construct within one study were averaged to produce one mean effect size to be used in later analyses. Fourteen studies were analyzed resulting in 88 different effect sizes. These effect sizes represented 13 career outcomes. Subcategories of groups such as gender and type of mentoring program were also coded. A final database was created that included the 14 studies with an overall effect size and one effect size for each outcome subcategory of gender and program effect sizes (recorded when available). Each mean effect size was weighted by its respective sample size, and confidence intervals around the weighted mean were produced using a SPSS macro, MeanES, created by [Lipsey and Wilson \(2001\)](#).

A random effects model was used to analyze the effect sizes. Because of the small number of studies included in the analysis, a test for homogeneity of effect sizes would not have adequate power to determine if the effect sizes differed by more than sampling error. A more conservative approach was taken which assumed that the studies in the analysis disagreed on the magnitude of the effect of mentoring which could be caused by something other than sampling error. A random effects model was employed which includes an additional variance component in calculating mean effects to handle the heterogeneity of variance surrounding the magnitude of the effect size for mentoring across studies ([Hunter & Schmidt, 2004](#); [Lipsey & Wilson, 2001](#)).

There were 14 studies that provided enough data to calculate effect sizes. From these studies there were 88 effect sizes computed that ranged from  $-.5568$  to  $.8440$  with a standard deviation of  $.27$ . Hoaglin et al.'s method for detecting outliers as reported in [Shadish et al. \(1999\)](#) was used to determine the upper boundary ( $.9242$ ) and lower boundary ( $-.4838$ ) of the effect size distribution. One effect size of  $-.5568$  fell outside the lower boundary indicating a potential outlier. These effect sizes were

aggregated to produce one effect size per study. These study level effect sizes ranged from .106 to .691 and were also examined for outliers using Hoaglin et al.'s method. One study level effect size (.6905) fell outside the upper limit (.6794) of the distribution. Both the individual effect size and the aggregated study level effect size were kept in the analyses because of the small number of studies and effect sizes included in this meta-analysis. All effect sizes were needed.

The author checked coding reliability by recoding all of the studies 9 months after the initial effect size coding and analyses were conducted. The new coded effect sizes were compared to the initial effect sizes. The discrepancies that were found involved career outcomes that were not coded the first time. These effect sizes were calculated and included in new analyses. The articles utilizing comparison groups that were excluded initially from this meta-analysis were again reviewed for possible inclusion. One excluded study did present effect size information. After further investigation, it was found that this was a study presenting the same information as another study that was already coded and included in the meta-analysis. The excluded study was indicated as being part of the same data collection and not represented twice in this meta-analysis.

### 3. Results

#### 3.1. Overall effectiveness

Twelve out of the 14 studies study-level effect sizes used in the analysis had significant overall effect sizes. Refer to Table 1 for the mean effect sizes for each study included in the meta-analysis. The overall mean effect size of mentoring was .2437

Table 1  
Studies included in meta-analysis

Authors	Year	Protégé <i>n</i>	Non-Protégé <i>n</i>	<i>k</i>	<i>MES</i>	<i>SE</i>	95% CI	
							Lower	Upper
Baugh, Lankau, and Scandura	1996	164	111	4	.362*	.06	.240	.483
Chao	1997	151	93	2	.303*	.05	.215	.392
Chao, Walz, and Gardner	1992	265	284	2	.179*	.06	.068	.289
Corzine, Buntzman, and Busch	1994	92	115	3	.324*	.08	.163	.485
Day and Allen	2004	61	64	2	.422*	.13	.171	.673
Fagenson	1989	86	150	3	.508*	.08	.351	.665
Fagenson	1994	46	54	3	.132	.12	-.095	.359
Mobley, Jaret, Marsh, and Lim	1994	66	51	1	.690*	.15	.401	.979
Nielson, Carlson, Lankau	2001	272	219	1	.178	.09	-.0003	.356
Ragins and Cotton	1999	614	548	7	.106*	.02	.065	.146
Schwerin and Bourne	1998	612	649	2	.169*	.03	.105	.233
Seibert	1999	18	43	6	.255*	.11	.043	.468
Wallace	2001	152	79	2	.249*	.06	.137	.360
Yoder	1992	236	154	2	.249*	.06	.131	.366

*k*, number of outcome effect sizes provided.

\*  $p < .05$ .

with a weighted standard deviation of .120. The 95% confidence interval around this mean effect ranged from .175 to .311. This effect was found to be significant at the .05 level for Type I error, indicating that mentoring does influence career outcomes for mentored individuals when compared to people who were not mentored.

The mean effect size is a statistical summary of the results of other studies. If the results of the studies included in the meta-analysis vary in the magnitude of the reported effects, then the average may not be the best summary of the effect of mentoring on career outcomes. The more unexplained variance across studies, the less certain one can be of the summary statistic (Lipsey & Wilson, 2001). The precision of individual study results can be gauged by examining the confidence intervals. Particularly with a small number of studies, the variability in the results that contribute to the overall mean effect size can be examined best by the confidence intervals for each study. The confidence intervals were calculated using formulas from Lipsey and Wilson (2001, p. 131). The confidence intervals show the extent of the uncertainty or variability of the results included in the overall analysis (Hunter & Schmidt, 2004; Thompson, 2002). A larger interval around a study's mean indicates there is more variability and error, thereby indicating less precision in the results. Fig. 1 shows the 95% confidence intervals around the mean effect from each study included in the analysis.

### 3.2. Career outcomes

The effect sizes calculated represented 13 different career outcomes. There were 11 outcomes for which there were at least two studies providing data, and these outcomes were analyzed and reported (See Table 2). Individual outcome analyses indicated that the mean effect size for organizational commitment, job satisfaction, self-esteem, work stress, work–family conflict, and perceptions of promotion or career advancement opportunities were statistically significant. The positive effect sizes for these outcomes shown in Table 2 indicate that protégés have higher job satisfaction and self-esteem, greater organizational commitment and perception of promotion opportunities, lower work stress, and lower work–family conflict than those not mentored. Random effects modeling also indicated that the effect of mentoring on income, perception of alternative employment opportunities, intent to stay, tenure, and number of promotions was not statistically significant when compared to those not mentored.

Random effects modeling indicate that the above results were either significant or not significant, but Hedges and Olkin (1985) as reported in Hunter and Schmidt (2004) advise researchers to rely not only on statistical significance but also on the size of the uncertainty of the results. Confidence intervals can graphically represent the precision of the results as well as show statistical significance. If a confidence interval does not contain zero then the mean effect is considered statistically significant. See Fig. 2 for the 95% confidence interval around each career outcome's mean effect size. Three of the significant outcome effect sizes have the lower limit just barely above zero, (e.g., organizational commitment, self-esteem, and work stress). The

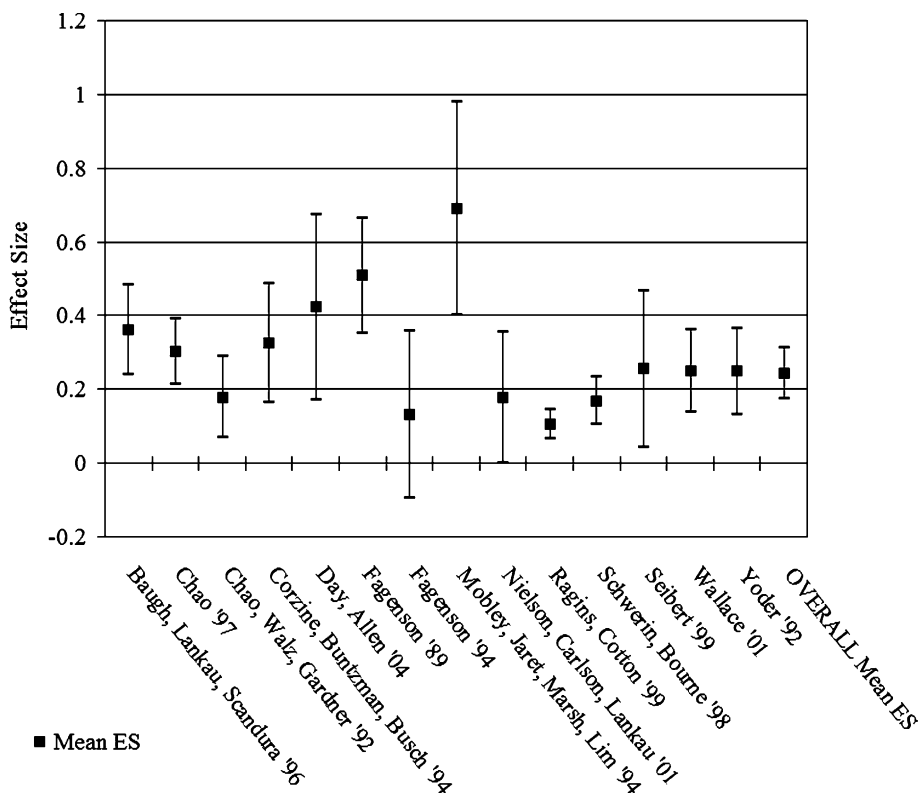


Fig. 1. Ninety-five percent confidence intervals from studies included in the mentoring meta-analysis.

mean effect size for work stress has twice the amount of uncertainty as the other two outcomes and is only based on two studies. Based on this, the significance of mentoring for reducing work stress is questionable and should be viewed cautiously. The mean effect of mentoring on increasing income was not statistically significant and the lower limit of the confidence interval was just barely below zero. While the confidence interval around the non-significant mean effect of income was much smaller than the uncertainty in the significant outcome of work stress, the small number of studies involved in estimating the effect of mentoring on income combined with the non-significant results also suggest caution in interpreting the results for this career outcome.

### 3.3. Type of program

The type of mentoring program has been shown in some studies to influence protégés' career outcomes (e.g., Chao, Walz, & Gardner, 1992; Ragins & Cotton, 1999; Seibert, 1999). Formal mentoring programs are established and managed by an orga-



Table 2  
Effectiveness of mentoring on outcomes

Career outcomes	n	MES	SE	95% Confidence interval	
				Lower	Upper
<i>Objective</i>					
Income	6	.149	.087	-.021	.320
Tenure	3	.037	.087	-.133	.208
Number of promotions	2	.474	.257	-.031	.979
<i>Subjective</i>					
Job satisfaction	10	.387*	.073	.245	.529
Self esteem	4	.177*	.086	.008	.346
Intent to stay	4	.099	.095	-.087	.286
Promotion, career advancement opportunities	4	.485*	.085	.318	.652
Organizational commitment	3	.200*	.094	.015	.385
Alternative employment opportunities	3	.036	.080	-.121	.194
Work stress	2	.406*	.206	.0007	.811
Work–family conflict	2	.206*	.076	.057	.355

n, number of studies providing aggregated effect sizes.

\*  $p < .05$ .

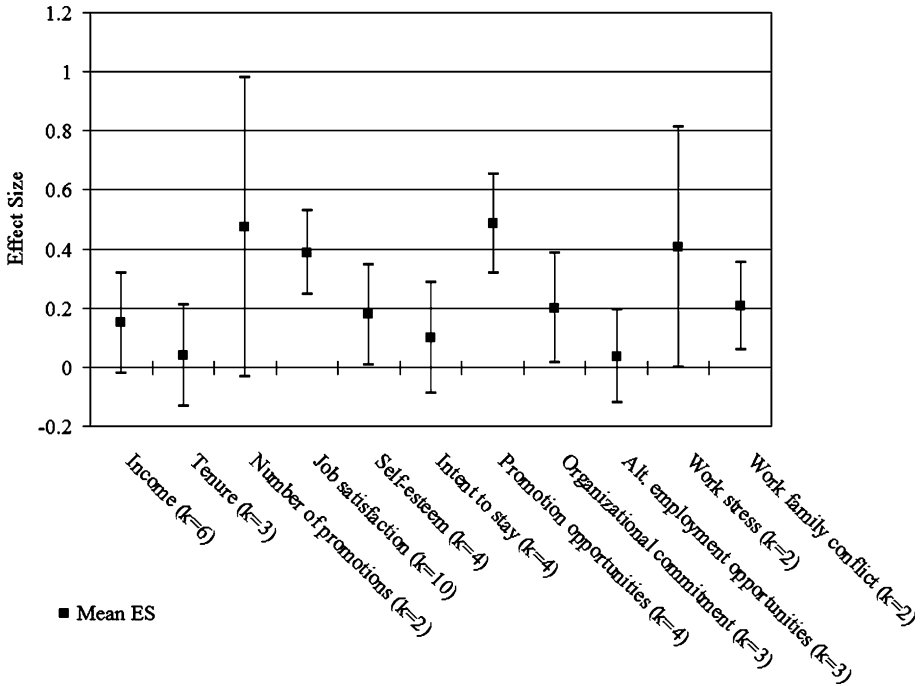


Fig. 2. Ninety-five percent confidence intervals of mentoring outcomes analyzed.

Table 3  
Effectiveness of type of mentoring program

Type of Program	<i>k</i>	<i>MES</i>	<i>SE</i>	95% Confidence interval	
				Lower	Upper
Formal	3	.057	.112	-.163	.279
Informal	2	.259*	.106	.051	.468

*k*, number of studies providing effect sizes.

\*  $p < .05$ .

Table 4  
Effectiveness of mentoring for males and females

Gender	<i>k</i>	<i>MES</i>	<i>SE</i>	95% Confidence interval	
				Lower	Upper
Male	2	.551*	.153	.250	.851
Female	3	.385*	.161	.111	.660

*k*, number of studies providing effect sizes.

\*  $p < .05$ .

nization. In formal programs, the mentoring program sponsor pairs mentors with protégés. An informal mentoring program is one in which individuals spontaneously engage in mentoring relationships without the intervention of the organization (Chao et al., 1992). Table 3 shows the results of the comparison of the effects of informal and formal mentoring programs. Results indicated that informal mentoring had a small but significant positive effect on career outcomes, whereas formal mentoring had no significant effect. The significant effect of informal mentoring should be viewed cautiously since there were only two studies that provided an effect for informal mentoring and the lower limit of the confidence interval is very close to zero.

### 3.4. Gender of protégés

Some of the largest mean effects of mentoring were found when men and women were analyzed individually. The effect of mentoring was significant for both men and women. See Table 4 for the comparison of the effects of mentoring for men and women. The confidence intervals are also larger than most of the others indicating less precision of these results.

## 4. Discussion

Many studies over the last 20–25 years have examined the benefits of mentoring for the protégé and the organization. A closer examination of these studies revealed that very few of the research designs evaluated mentoring in comparison to those not mentored. Most of the studies just looked at the association of

mentoring and certain career outcomes. One cannot make causal connections between receiving mentoring and career outcomes without a comparison group and a design that examines alternative explanations for the relationship. This quantitative review examined only articles that reported results for comparison groups. A review of the studies being published revealed that there is not only a lack of studies with comparison groups but also a general lack of experimental or even quasi-experimental mentoring research. The majority of the articles were reporting survey results with poor response rates. Out of the 106 articles evaluated, only three studies were experimental designs, and five studies were longitudinal surveys.

Unfortunately there were only a small number of studies that fit the inclusion criteria. Analysis of the 14 studies found that mentoring does indeed have an overall significant positive effect on career outcomes, though the mean effect of mentoring compared to no mentoring is considered small by convention (Lipsey & Wilson, 2001). Even with the small number of studies comparing mentoring to non-mentoring conditions in this analysis, a significant positive effect was found such that those people receiving mentoring have a slight advantage in their careers over those not mentored. After evaluating the confidence intervals and number of studies involved for the individually analyzed career outcomes, one can more confidently associate mentoring with increased job satisfaction, and perceived promotion or career advancement opportunities. The other statistically significant outcomes have confidence intervals with lower limits that sit too close to zero to confidently attribute them to a mentoring relationship. Job satisfaction and income are the most popular outcomes examined evidenced by the larger number of effect sizes reported across the studies. More studies are needed that examine the impact mentoring has on outcomes such as organizational commitment, intentions to stay, tenure, number of promotions, self-esteem, alternative employment opportunities, work stress, and work–family conflict.

Hunter and Schmidt (2004) advise, especially with a small number of studies, examination of the overall results and to make final conclusions not only with regard to statistical significance but also other theoretically relevant findings (e.g., other meta-analyses). The only other published meta-analysis on mentoring is from Allen et al. (2004). The results of Allen et al.'s analyses were reported in weighted  $r$  and were converted to  $d$  for comparison to my findings using a formula provided by Hunter and Schmidt (2004, p. 247). Comparison of my current results was only made to the results reported in Table 1 from Allen et al. (2004, p. 130), since these were the results that compared protégés to non-protégés. Regardless of the statistically significant findings from either meta-analysis, the magnitudes of our respective effect sizes were very similar. In the following sentences, the effect size listed first within the parentheses was found in my current analysis, and the effect size listed second was found by Allen et al.'s analyses. Mentoring had a small effect on income (.15; .25) and intent to stay (.10; .12). Small to medium effects were found for job satisfaction (.39; .36), number of promotions (.47; .62), and promotion opportunities or expectations for advancement (.49; .52). For this meta-analysis, satisfaction with one's career was not reported with the other outcomes because there was one study that provided an

aggregated effect size. This one effect size of .34 that I found is similar in magnitude to Allen et al.'s effect size of .42 for career satisfaction.

#### *4.1. Type of mentoring program*

The Allen et al. (2004) article did not address differences in the type of mentoring program or which program may be more effective if at all. I found, albeit with a limited number of studies, that informal programs were more effective. The difference between how protégés in informal and formal programs were selected could explain the improved success of informal mentoring. In informal mentoring, mentors and protégés select each other naturally as part of a mutual attraction and similarity of interests and personality characteristics. Protégés informally selected for mentoring based on their ability and potential would naturally achieve success (Allen, Poteet, & Russell, 2000). In formally assigned relationships, the pair may not have similar interests or characteristics. These formal mentoring pairs could have protégés with a range of abilities for success (Kogler Hill & Bahniuk, 1998; Lee, Dougherty, & Turban, 2000). Organizations wanting to establish a formal mentoring program can improve the success of mentoring by providing aspects of informal mentoring such as self-selection (Forret, 1996; Kogler Hill & Gant, 2000).

#### *4.2. Gender and ethnic issues*

There were three articles in this meta-analysis that reported information on the gender of the protégé. The confidence intervals around the mean effect for males and females are large indicating greater variability among the studies. More studies are needed that contribute information about the differential effect mentoring has for males and females. None of the studies with comparison groups looked at the gender of the mentor. With regard to the ethnicity of mentors and protégés, none of these articles analyzed reported ethnic data except in summary form for all survey respondents and not for the mentor–protégé pair. Other studies examined in the review of the mentoring literature, while not included in the meta-analysis because they did not compare to non-protégés, looked at the gender and ethnicity of mentoring pairs. Some articles reported an advantage of having a white male mentor. Protégés with white male mentors earned \$9800 to \$16,840 more a year than protégés with mentors of other ethnic and gender combinations (Dreher & Chargois, 1998; Dreher & Cox, 1996). For minorities, the similarity of gender and race with their mentor was found to be important for increased psychosocial support and satisfaction with the mentoring relationship (Ensher & Murphy, 1997; Kogler Hill & Gant, 2000).

#### *4.3. Limitations*

A limitation of this study is the increased chance of Type II error rate when conducting tests on individual career outcomes. By analyzing the effect of each outcome

individually the chance of finding significant associations increases. Analyzing multiple outcomes capitalizes on the chance of finding significant associations when there really is not a significant relationship. Hunter and Schmidt (2004) report that this is a potentially major problem when conducting sub-analyses in a meta-analysis. They state that there is no statistical solution for correcting for this problem in meta-analytic results (2004; p. 463). A better way to evaluate the effect of mentoring is to not rely on statistical significance as a hard and fast rule, but to compare confidence intervals across studies and the results of sub-analyses from other studies (Hunter & Schmidt, 2004; Lipsey & Wilson, 2001; Thompson, 2002).

Another limitation is the representativeness of the results based on the survey data. The data analyzed in the studies included in this meta-analysis were all based on self-reported survey results and not experimental research designs. The response rates that some of these articles reported ranged from 22 to 75% averaging 46%. This response rate is acceptable, but it still leads one to question the differences between the people who responded to the survey and those who did not, indicating a possible selection bias. Because respondents were placed into mentored and non-mentored groups based on their answers to survey questions and not randomly assigned to conditions as they would have been in an experimental design, the non-respondents could be significantly different from the survey respondents in any number of ways, leading one to question the representativeness of this sample and the generalizability of the results. This non-response error is a threat to the validity of the overall results of this meta-analysis.

#### 4.4. Future research

A problem with mentoring research is the lack of knowledge of the characteristics and career outcomes of the people who do not receive mentoring. If protégés and non-protégés are significantly different, then the effect of mentoring could be a result of characteristics such as the personality differences in people willing to enter into a mentoring relationship and those not mentored. A study by Allen et al. (2000) found that mentors selected protégés who had greater potential and chances of organizational success rather than individuals who needed the most help. They point out “if the characteristics that are most desirable in a protégé are the very same characteristics that propel and individual toward career success in the first place, then research that has made simple comparisons of the career outcomes of mentored versus non mentored reveals little about the utility of mentoring,” (Allen et al., 2000, p. 280). Turban and Dougherty (1994) found that there were personality characteristics that influenced a person’s likelihood of receiving mentoring. Individuals with internal loci of control, high-self monitoring, and emotional stability were more proactive and pursued a mentoring relationship. A protégé’s pursuit of mentoring lead to receiving mentoring which improved their career success (Turban & Dougherty, 1994). More research is needed that compares characteristics of protégé and non-protégés and whether individual characteristics or receipt of mentoring is the catalyst for improved career outcomes.

Research whether longitudinal or retrospective descriptive survey research should utilize comparison groups to provide better evidence for the effect of mentoring on

specific outcomes. Most of the research on mentoring is descriptive survey research where the researchers used various advanced statistical procedures to examine the relationship of mentoring to career outcomes. Of these only a fraction reported the results they obtained from non-protégés. Career outcomes of non-protégés could be compared to the career outcomes of protégés if studies reported the results of the non-protégés that responded to the survey. A much clearer picture of mentoring and career outcomes can be obtained if these results were reported. Reporting the mean, standard deviation, and size of the groups for each outcome of interest would allow future researchers to use the information in a meta-analysis.

## 5. Conclusion

As these results show, protégés have a small but significant advantage over non-protégés. Just by looking at the sheer number of studies in support of mentoring, one would assume that mentoring does in fact provide numerous benefits to those receiving it, thereby, leaving those not mentored at a disadvantage in their career success. The small number of studies contributing information of comparison groups makes the size and significance of the effect on individual career outcomes questionable evidenced by the confidence intervals. More research is needed to provide stronger support for the effectiveness of mentoring particularly research that focused on the lesser-reported outcomes of career success. More quality studies can reduce the confidence intervals and improve the precision of the effect mentoring has on career success. More studies examining the differential effect mentoring has for males and females as well as studies evaluating the type of mentoring program are needed to confidently assess mentoring's effectiveness in the workplace.

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*Note.* References marked with an asterisk (\*) indicate studies included in the meta-analysis.

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