Chapter 9 - Conducting General Versus Population and Setting-Specific Meta-Analyses

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Meta-analysis is an increasingly popular technique that systematically and statistically summarizes the results from research studies in a particular area (Lipsey & Wilson, 2001). Meta-analytic studies can be particularly useful to practitioners because they combine the results from various studies and eliminate the drudgery of sifting through the findings of multiple individual studies. Although meta-analysis can be used to summarize research in multiple areas (e.g., correlational studies), I am going to restrict my comments to intervention studies with a focus on career interventions. Specifically, this chapter will address the issues surrounding conducting general meta-analyses versus population and setting-specific meta-analyses in the career area.

With meta-analysis, a researcher calculates an effect size for each study, typically by subtracting the control group mean from the treatment group mean and dividing by the pooled standard deviation of the groups. Therefore, if the treatment group mean is larger than the control group, the effect size is positive and reflects the degree or magnitude of the treatment group's effect. These effect sizes are weighted, on factors such as sample size, and are combined to produce an average effect size for the intervention studies. The content of the combined intervention studies is important in this process, along with whether it is better to more narrowly restrict studies to specific populations (e.g., African Americans) or settings (e.g., career development centers) or to more broadly include studies, which will be labeled general meta-analyses.

Certainly there are advantages to having more specific meta-analyses. For example, a career counselor working with African American clients could search databases such as PSYCINFO for meta-analyses of career interventions with African Americans. A recent search of PSYCINFO with the keyword meta-analysis revealed over 16,000 studies. It would be difficult for the career counselor to review each of the studies in the hopes of identifying a meta-analysis pertinent to career counseling. Thereby, a clinician could simply enter the terms African American and career interventions and theoretically identify a meta-analysis, if such a meta-analysis existed, that could inform the clinician on the types of career interventions associated with larger effect sizes. The clinician could then adopt those interventions shown to be most effective with African American clients and provide evidence-based practice. Although such a meta-analysis does not currently exist, the desire for such information is evident as many researchers have called for an exploration of the efficacy of career interventions with ethnic and racial minorities (Fouad, & Kantamneni, 2008; Leong & Flores, 2015). Not only is there a need for specific information regarding the effectiveness of career intervention with racial and ethnic minority clients, but there may also be a need for specific

meta-analyses for other demographics such as gender as we do not know which career interventions may be more effective with men versus women or vice versa. Other demographic variables that might benefit from a specific meta-analysis include socioeconomic status and, in particular, investigating effective career interventions for those in poverty. As Brown (2017) asserts, we do not know what types of interventions work with those who have been marginalized in our society. Although there have been assertions that interventions involving current theories are not applicable, these assertions have not been tested, and there is a need for these types of studies.

In psychotherapy research, many specific meta-analyses have centered on diagnoses such as exploring which interventions are most effective with obsessive-compulsive disorder (e.g., Stein, Spadaccini, & Hollander, 1995; van Blakom et al., 1994). Therefore, vocational psychologists may want to follow in the footsteps of psychotherapy researchers and conduct specific meta-analyses of common career diagnoses. There are, however, no commonly used diagnostic systems in the career area, although there have been calls for such criteria (Rounds, & Tinsley, 1984; Whiston, 2002). Although career issues cover a wide gamut of topics (e.g., work-family conflict, job search, retirement), much of the empirical focus has been on career decision making (e.g., Brown & Rector, 2008; Gati, Krausz, & Osipow, 1996), which may be an area ripe for specific meta-analyses. Sampson (2008) and Sampson, Reardon, Peterson, and Lenz (2004) argued that career interventions should be structured to the type and level of clients' readiness for career decision making. Interestingly, there is not even a specific meta-analysis that has investigated interventions for clients who are indecisive, which means they have chronic problems with career decisions (Salomone, 1982). Sampson, McClain, Musch, and Reardon (2013) identified variables affecting readiness to benefit from career interventions that could serve as a foundation for diagnosing clients who lack readiness for career decision making. Sampson et al.'s schema includes personal characteristics; personal circumstances; limited knowledge of self, options, and decision making; and prior experience with career interventions.

Whereas population-specific meta-analyses are comparatively easy to conduct if there are a sufficient number of studies of career interventions with that population, setting-specific meta-analyses are a little more complex. An example of a setting-specific meta-analysis would be a study of interventions typically conducted at a career development center. Sometimes career development personnel conduct evaluation studies of the interventions they provide, and it is easy to determine that the study falls under the umbrella of services typically provided by a career development center. Other times, however, researchers may be conducting the study without assistance from career center personnel, making it more difficult to determine if the studied intervention is a service typically provided in a specific setting such as a career development center. Moreover, there is probably debate among career center personnel on what interventions are considered typical services. Therefore, it is difficult to identify the population of studies that should be included in a meta-analysis of career centers, which is also true of other settings (e.g., private practice). The problems associated with conducting setting-specific studies, however, do not diminish the importance of such meta-analyses. A setting-specific meta-analysis, such as one conducted on career centers, could be shared with appropriate administrators to show the effectiveness of such sites. Such a meta-analysis could also influence the provision of services as personnel could provide more interventions associated with large effect sizes and decrease or eliminate interventions with small effect sizes.

Brown and Ryan Krane (2000) stated there was no need for another general meta-analysis of career interventions as there already was sufficient documentation of the effectiveness of career intervention in general. It should be noted that there are three meta-analyses of career interventions in general (i.e., Oliver & Spokane, 1988; Spokane & Oliver, 1983; Whiston, Sexton, & Lasoff, 1998) and no population-specific or setting-specific meta-analyses of career interventions. Cooper and Hedges (2009) disagreed with Brown and Ryan Krane (2000) and suggested that conceptually broad topics frequently benefit from meta-analyses, particularly when there are sufficient studies to contribute to these research syntheses. When making a decision to pursue a conceptually narrow meta-analysis or a broader one, researchers should first consider the target audience for the study. The second consideration concerns the number of studies and whether broadening the topic causes the project to become unwieldly. According to Cooper (2009), one of the advantages of a more general

meta-analysis is that rival hypotheses can often be examined.

With any meta-analysis, the concepts being examined should relate to the operational definitions of those concepts. The advantage of starting broad is that the researcher may find a similar concept from another discipline or literature that can be included in the meta-analysis because of its relevant operational definition. As an example, a meta-analytic researcher may be interested in the effectiveness of career assessments. The researcher could initiate the project by only looking at studies of interest inventories and ability assessments but may find values assessments in the literature and want to broaden the meta-analysis to include measures of values. Thus, the robustness of the meta-analysis is increased by the addition of the values assessments. Therefore, Cooper (2009) recommends starting the literature search with the broadest conceptual definition possible in an attempt to include any relevant study and eliminating unrelated studies later.

One of the problems with broad or general meta-analyses is that erroneous conclusions can be drawn when results across studies can be masked by using very broad categories. To complement this conceptual broadness, meta-analysts should be very thorough in their attention to and coding of study characteristics because it is possible to analyze data according to these study characteristics. For example, we may find that the broad area of using career assessments with clients produces positive outcomes, but we may be more interested in whether interest inventories, skills/abilities assessments, or values measures produce the largest effect sizes. This can be accomplished through moderator analyses. One of the advantages of general meta-analysis is the ability to systematically examine several sources of variation in the effectiveness of an intervention. For example, studies A and B may vary simply because of sampling error, differences in the quality of the research, attributes of the participants, intervention variations, or differences among outcome measures (Tickle-Degnen, 2001). As both Becker (2017) and Brown (2017) identify, the quality of the outcome measures used in a meta-analysis is critical to the conclusions that can be drawn from the results. In conducting a meta-analysis, the researcher typically conducts a statistical test of homogeneity to determine whether the differences in the effect sizes are likely due to sampling error (Lipsey & Wilson, 2001). If the results of this test indicate the variation in effect size is due to sampling error, then one simply concludes that this is true, and no further exploration of moderators of the average effect size is needed. For example, if we were doing a meta-analysis of effectiveness of career assessments and the test indicates the effect size was homogeneous, then we would conclude that the variation in effect size is due to sampling error and not differences in whether the assessment was of interest, skills/abilities, or values. If on the other hand, the effect sizes are not homogeneous, then the test of moderator variables can be conducted as the variance in effect sizes is due to something more systematic than sampling error. Therefore, when an indication of heterogeneity of effect sizes exists, the researcher can then investigate whether these differences are due to research methodology, type of participant, intervention characteristics, or outcome measures, assuming that the researcher has adequately coded study information in the desired areas. Hence, analyses of moderator variables allow the researcher to go from general findings to more specific results. For a discussion of moderator analyses and for ways to expand on moderator analyses, please see Becker (2017).

This returns us to the question of whether it is better to start with a specific meta-analysis or to hope for a certain level of specificity in a general meta-analysis using moderator analyses. The answer to this question depends on the research questions of the meta-analyst and the quality of the research being analyzed. Certainly, the features of the research question dictate the preference in specific versus general meta-analysis. For example, for questions related to a certain population, then a more narrowly defined meta-analysis is probably best. As indicated earlier, there are needs for meta-analyses in the career area related to specific populations, and researchers are encouraged to pursue these types of meta-analyses. There are also needs for specific meta-analyses related to particular diagnoses, but there needs to be more consensus within the field regarding a diagnostic system.

On the other hand, there is also a need for general meta-analyses that use moderator analyses. There is probably not a need for another general meta-analysis that simply examines the effectiveness of career interventions generally as that is well established (Oliver & Spokane, 1988; Spokane & Oliver, 1983; Whiston et al., 1998). For an overview of the effectiveness of career

interventions, please see Brown (2017). A good example of a general meta-analysis that used moderator analyses to provide pertinent information is Brown and Ryan Krane (2000). Brown and Ryan Krane looked at the effectiveness of career interventions and then examined the effects of specific types of interventions. They found that certain types of interventions, particularly when used in combination, were associated with larger effect sizes. These ingredients, often referred to as the critical ingredients of career counseling, are as follows: written exercises, individualized interpretation and feedback, occupational information, modeling, and attention to building support. This meta-analysis is somewhat dated and replicating it with current research studies would be a major contribution to the field. Other general meta-analyses that could be useful are moderator analyses that examine variation among outcome measures, type of assessment strategies, length of services, theoretical underpinnings of the interventions, and type of facilitator. It should be noted, however, that coding for moderator analyses is not easy, and clear operational definitions are necessary in these types of meta-analyses.

In conclusion, the answer to the question of whether specific or more general meta-analyses are better is simply that it depends. Certainly the field could benefit from both population-specific and setting-specific meta-analytic studies. The field could also benefit from general meta-analyses in which pertinent moderators are used. One of the problems, however, is the dearth of research studies conducted on career interventions, which hampers the ability to conduct specific meta-analyses or general meta-analyses with germane moderators. Therefore let me conclude this chapter with a call for more research on career interventions. In particular, there is a need for programmatic research that will address what interventions work with which clients, under what circumstances. This is not a novel call, as Fretz (1981) made this same plea 35 years ago, but its relevance and importance continues through today.

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