Chapter 8 - Meta-Analysis and Evidence-Based Career Practice: Current Status and Future Directions

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The invitation to present at this conference on meta-analyses and career intervention outcome provided me with a timely opportunity to look back at and study the meta-analytic literature that has accumulated since Spokane and Oliver's (1983) seminal meta-analysis. What I learned is that these meta-analyses have yielded some important but limited guidelines for evidence-based career practice, and that there is a great deal more that we still need to know to provide a firm scientific basis for career interventions. I will start by highlighting three general, but important, findings about career intervention effectiveness noted in three of the most recently published meta-analyses (Brown & Ryan Krane, 2000; Liu, Huang, & Wang, 2014; Whiston, Sexton, Lasoff, 1998). The Brown and Ryan Krane (2000) and Whiston et al. (1998) meta-analyses used the same effect size estimates (thus allowing us to compare apples with apples) and provided cumulative knowledge about the effectiveness of career interventions as of 2000. I chose also to include the Liu et al. (2014) meta-analysis because it focused specifically on the outcomes of job finding interventions—interventions that should be of more interest to SVP members than they seem to be. I will then discuss in a bit more detail three directions for future investigation that I think are critical if we are going to achieve evidence-based career intervention practice. Others chapters included in this section will have additional suggestions, and I hope that we can collectively outline some doable directions for future primary as well as meta-analytic research. After all, the yield from meta-analyses is only as good as the primary research that was synthesized in them.

Current Status

To date, there have been six major meta-analyses on career intervention effectiveness in the published literature (Brown & Ryan Krane, 2000; Liu, Huang, & Wang, 2014; Oliver & Spokane, 1983; Spokane & Oliver, 1988; Whiston, Brecheisen, & Stephens, 2003; Whiston, Sexton, & Lasoff, 1998). All but one of these (Whiston et al., 2003) tended to address the question of whether receiving a career intervention is more effective than not receiving the intervention by selecting studies that compared a career intervention to some kind of no-intervention control (Whiston et. al., 2003 compared different intervention modalities). The two meta-analyses conducted by Laurel Oliver and Arnie Spokane, while seminal, predated the rapid growth in knowledge about meta-analytic methodologies that have appeared over the past 20 or so years. Whiston et al. (1998) focused on a broader array of outcomes than did Brown and Ryan Krane (2000), but both corrected for sampling error and small sample bias by using Hedges's g as the effect size estimate. Finally, as I already noted, Liu et al. (2014) presented a meta-analysis of job search intervention effectiveness. My summary was developed from the latter three (Brown & Ryan Krane, 2000; Liu et al., 2014; Whiston et al., 1998) meta-analyses.

Collectively, I think that these three meta-analyses have yielded three findings that have important implications for the design of evidence-based career interventions.

Finding #1: Career Interventions are Modestly More Effective than Doing Nothing in Promoting Outcomes Associated with Both Choice-Making and Job Finding

Whiston et al. (1998) and Brown and Ryan Krane (2003) reported Hedges's gs of .30 and .34, respectively, with standard errors of .02 (Whiston et al, 1998) and .01 (Brown & Ryan Krane, 2000). The 95% confidence intervals obtained from these two meta-analyses overlap, suggesting that true effect size associated with career interventions for primarily choice-making difficulties is probably between .26 and .36. Thus, it appeared that by 2000, the average client receiving some sort of career intervention achieved from a quarter to about a third of a standard deviation better outcome on measures associated with choice-making difficulties than did persons who receive no interventions, although neither of the meta-analyses corrected for all potential sources of artifact (e.g., measurement error, range restriction) and both employed fixed effects rather than random effects meta-analytic models.

Liu et al. (2014) meta-analyzed (using a random effects model) the result from 47 studies (n = 9,575) that compared a job-finding intervention to a no-intervention control using experimental or quasi-experimental designs. The overall odds ratio (OR) was 2.67, suggesting that odds of finding a job were 2.67 times higher for participants in job-finding interventions than control or comparison group participants. Thus, it appears that continuing to do what we do will be demonstrably but modestly helpful to the average client seeking help with choice-related and job-finding concerns. However, these meta-analyses have also suggested some strategies that seem to improve the magnitude of career intervention effectiveness.

Finding #2: Several Intervention Components Seem to be Important to Outcome for Both Choice-Making and Job-Finding Interventions

Brown and Ryan Krane (2000) coded for the presence or absence of 18 intervention components suggested by theory and clinical writings (e.g., use of self-report inventories, values clarification exercises, modeling) and entered these in the last step in a series of weighted least square regressions to predict effect sizes. Results revealed that five specific intervention components (see Table 1) accounted for significant unique variance in effect sizes over and above the variance accounted for by study (publication status), method (e.g., true experiment, quasi-experiment), participant (e.g., gender), and treatment (e.g., group, individual) characteristics—(a) Written Goals, (b) Information on the World of Work, (c) Modeling, (d) Support Building, and (e) Individual Attention to Goals and Assessment Results (or WIMSI as an acronym, suggested to me by John Holland). Further, Brown and Ryan Krane (2000) showed a near linear relationship between the number of these components included in the intervention and effect size, with, for example, an effect size of .99 associated with interventions including three of the components. Thus, these data suggest that including the five critical ingredients, whatever else we might do, will probably yield more potent outcome effects than not including them in interventions for primarily choice-making difficulties.

Table 1. Critical Ingredients of Choice Counseling (Brown & Ryan Krane, 2000) and Job Finding (Liu et al., 2014) Interventions

Choice Counseling	Job Finding
Written Goals	Promoting Goal Setting (OR = 4.67)
Information on the World of Work	Teaching Job Search Skills (OR = 3.32)
Modeling	Improving Self-Presentation (OR = 3.40)
Support Building	Enlisting Social Support (OR 4.26)
Individutal Attention (to goals and assessment)	Boosting Self-Efficacy (OR = 3.25)
	Encouraging Proactivity (OR = 5.88)

Note: OR = Odds Ratio

Liu et al. (2014) coded for the presence of seven specific intervention components suggested by theory and prior research (e.g., teaching job search skills, improving self-presentation) and found that six of them yielded significantly increased odds ratios when they were included in an intervention. These are also presented in Table 1 along with their respective odds

ratios—teaching job search skills (*OR* = 3.32), improving self-presentation (*OR* = 3.40), boosting self-efficacy (*OR* = 3.25), encouraging proactivity (*OR* = 5.88), promoting goal setting (*OR* = 4.67), and enlisting social support (*OR* = 4.26). Thus, like the five intervention components identified by Brown and Ryan Krane (2000), the odds of finding a job may be substantially enhanced if job finding interventions incorporate these six intervention components.

Finding #3: Goal Setting, Support Building, and Efficacy Enhancement Strategies are Critical Components in Both Choice-Related and Job-Finding Interventions and May Represent Today the Clearest, Meta-Analytically Derived Evidence-Based Practice Guidelines We Have for Career Practitioners in 2016

Finally, I hope you noticed from Table 1 that two specific intervention components emerged as critical in both of these meta-analyses—promoting goal setting and building/enlisting support. There are large bodies of literature on both goal setting and social support that can explain why these two components may be critical to career intervention effectiveness. For example, goals that are clear, specific, and attainable serve to direct individuals' attention, mobilize and sustain their efforts, and promote persistence in the face of obstacles (see Lent & Brown, 2013; Locke & Latham, 1990). Research suggests that support from family, friends, and others has the potential to buffer the negative effects of traumatic events (like job loss), boost context-relevant self-efficacy beliefs, facilitate the ability to translate interests into choices and to find jobs, and help to sustain effort in pursuing difficult tasks (see Lent & Brown, 2013; Wanberg, Glomb, Song, & Sorenson, 2005; Wanberg, Kanfer, & Rotundo, 1999).

Whiston (personal communication, May 2016) is currently updating the Brown and Ryan Krane (2000) meta-analysis and has found that self-efficacy building strategies (most notably strategies to promote career decision making self-efficacy beliefs) have been increasingly included in career interventions over the past 16 years. Whiston (personal communication, May 2016) has also found that efficacy-enhancing strategies represent another critical ingredient of today's choice making interventions. Thus, although some ingredients appear to be uniquely critical for choice-making (e.g.,

information on the world of work) and job-finding (e.g., teaching job search skills) interventions, three strategies (goal setting, support building, and efficacy enhancement) have emerged as critical for both types of interventions. These three intervention components, I think, deserve to be included as potentially critical ingredients in research on interventions targeted at other types of career difficulties as well. For example, might goal setting, support building, and efficacy enhancement be critical for those seeing counselors because of dissatisfaction or unsatisfactoriness at work?

Future Directions

Although there are numerous directions for future research that would inform evidence-based career practices and facilitate more useful future meta-analyses, I would like in the remainder of this chapter to highlight three, the first two of which are seldom mentioned in the literature.

Future Need #1: We Need to Identify Core Outcome Constructs

Although Sue Whiston (Whiston, 2001) has written previously about the need to decide on a core battery of outcome measures for career intervention research, I think that such efforts may be premature because we have to first decide on the core outcome constructs that are measured by extant scales. What I mean by this is that we have many constructs in our literature, each with its own measure or measures, that I think may be empirically redundant—the measures all measure the same thing, despite their titles. As I have written earlier (Brown, 2015), we have to understand that measures of constructs are not constructs themselves—they are always fallible because their scores are influenced by a variety of artifacts, such as sampling and measurement error, sample characteristics, and more. Further, the correlations obtained between any two measures are always attenuated due to the influence of these artifacts—lower than the correlations between the constructs themselves. However, if we correct the correlations for as many sources of artifact as possible, the resulting dis-attenuated correlations represent the relationship between the constructs themselves rather than fallible measures of them. If the dis-attenuated correlation is close to unity, then the two measures,

whatever they might be called, are actually measuring the same thing. For example, in the TCP (Brown, 2015) article, I demonstrated that the dis-attenuated correlation between Jim Sampson and colleague's (Sampson at al., 1996) Decision-Making Confusion scale and John Holland's (Holland, Daiger, & Power, 1980) Vocational Identity scale was -.91. The magnitude of this correlation suggests to me that these scales are measuring the same thing.

Similarly, I showed that the Work Volition (Duffy, Diemer, & Jadidian, 2012) and Work Hope (Juntunen, & Wettersten, 2006) scales were largely measuring the same construct, while the Career Concerns (Savickas, 1997) and Future Time Perspective (Shell & Husman, 2001) scales were also empirically redundant. I also found that some items on the Career Optimism Scale (Rottinghaus, Day, & Borgen, 2005) measured the same thing as Work Volition and Work Hope, while other items measured the same thing as Career Concerns and Future Time Perspective. My conclusion was that the Volition and Work Hope scales were both tapping into respondents' confidence in being able to complete career tasks over the life span, while the Concerns and Future Time Perspective scales were measuring respondents' feelings about their futures. The Career Optimism Scale mixed together both confidence and future orientation items.

Regardless of what I think are the common set of constructs measured by these scales, I think that the process of identifying core constructs will facilitate future outcome research and meta-analyses in two ways. First, the process of identifying core constructs will allow us to identify psychometrically sound measures of them (regardless of the measure's title) and thereby allow us to efficiently select appropriate measures. For example, it would be redundant and a waste of clients' time to administer both the Vocational Identity Scale and the Decision-Making Confusion Scale in an outcome study because these are really measures of the same thing. Second, the process would also benefit future meta-analyses by allowing meta-analysts to focus their analyses on the core constructs rather than on measures, many of which are redundant.

In this chapter and a previous article (Brown, 2015), I suggested that construct redundancy could be approached via dis-attenuating bivariate correlations

between scales. Betsy Becker's (2017) chapter in this volume described the MUTOS approach that would also be applicable for addressing questions of construct redundancy. It has the added advantage of ascertaining empirically the degree to which scales that are supposedly measuring the same constructs (by their titles) actually do so (See Becker's example of the self-efficacy measures used in the Brown and Ryan Krane meta-analysis). I also concur with Becker's (2017) suggestion that we create a shared database of information on career intervention effect sizes. This may provide a valuable vehicle for addressing questions of construct redundancy (in addition to its other benefits—See Becker, 2017).

Future Need #2: We Need to Know Whether Career Interventions Actually Make a Difference in the Lives of Our Clients

It is clear from the Brown and Ryan Krane (2000) and Whiston et al. (1998) meta-analyses that career interventions are modestly effective at increasing clients' scores on measures of career maturity, vocational identity (whatever that scale is measuring), career exploration, and more. What is not clear, however, is if clients' lives are improved by gains on these measures. Even including effect size estimates may not necessarily tell us what we need to know—whether the clients' gains made a difference in their lives (i.e., were clinically significant). For example, Jacobson and Truax (1991) illustrated the short-comings of effect size estimates as indices of clinical significance with the following example: Suppose that a weight loss treatment is compared to a no-treatment control condition for persons who are substantially overweight. The results show that the treatment participants lost an average of two pounds, while control participants lost no weight on average. These differences could turn out to be statistically significant and the effect size could be quite large. For example, if the pooled within group standard deviation was 1.00, then Cohen's d would be 2.00, suggesting that participants in the intervention group lost on average two standard deviations more weight than control group participants. But doesn't Cohen's d overestimate the impact of this intervention, and will a two pound weight loss really make a difference in the lives of these clients?

Jacobson and colleagues (Jacobson, Follette, & Revensdorf, 1986; Jacobson & Truax, 1991) introduced

into the psychotherapy outcome literature a method to address clinical significance by estimating the degree to which individual clients moved out of a dysfunctional distribution and into a functional distribution on outcome measures of interest (i.e., do clients become more like nonclients than clients at the end of treatment?). To measure clinical significance, Jacobson and Truax (1991) suggested that a cut-off score (C) could be estimated on outcome measures that would reflect whether a client's posttreatment score is closer to the mean of the distribution of scores obtained by nonclients than by clients (see Brown, 2014; Jacobson & Truax, 1991 for the formula). Jacobson and Truax (1991) also suggested that C should be complemented by ascertaining whether gain scores obtained by clients are statistically reliable and provided a formula for testing for statistically reliable change (RCI—See Jacobson and Truax, 1991). Together, C and RCI would allow counselors to determine for each client whether his or her change was (a) statistically reliable and clinically significant (called recovered by Jacobson and Truax, 1991), (b) statistically reliable only (the posttreatment score is still in the client distribution), (c) unchanged, or (d) statistically reliable in the wrong direction (deteriorated). I illustrated the use of the Jacobson and Truax (1991) method to assess the clinical significance of gains obtained by career clients on the Career Thoughts Inventory (CTI; Sampson et al. 1996) in an earlier chapter (Brown, 2014). I refer the reader to that chapter for the illustration and a more complete description of the Jacobson and Truax (1991) method.

I also introduced in the 2014 chapter and in a 2016 article (Brown & Roche, 2016) another method to address questions of clinical significance that can complement the Jacobson and Truax (1991) method or substitute for it when that method cannot be used. It is also applicable when one wants to compare pretreatment and posttreatment group means for their clinical significance (the Jacobson and Truax method is used to track individual client change). The method simply involves calculating a z score (called z_{cs}) at pretreatment and posttreatment using the treatment group's pretest and posttest means (M_T) and the means (M_N) and standard deviations (SD_N) of a norm group chosen to represent clinical significance. The formula is $z_{cs} = (M_T - M_N) / SD_N$ and addresses the question of whether the treatment group's mean is closer to the norm group mean after treatment than before treatment on the outcome measure (a z_{cs} could also be calculated

on comparison or control group means, if available, to compare the clinical significance of gains demonstrated by treat group versus control participants). A z_{cs} of 0.00 at posttreatment indicates that there were no differences between the means of the treatment and norm group (that clients became very similar to nonclients on this measure after counseling, demonstrating clinical significance).

Brown and Roche (2016) illustrated the use of the method with several examples from the published literature (I also provided additional illustrations in the 2014 chapter), one of which was a study by Masdonati, Massoudi, and Rosier (2009) that compared a four to five session individual career counseling intervention for Swiss adults to a nonequivalent control group. Outcomes were measured with the Career Decision-Making Difficulties Questionnaire (CDDQ; Gati, Krausz, Osipow, 1996) and the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Using normative data on each scale that we also provided in the 2016 article (Brown & Roche, 2016) for Swiss young adults, we found that at pretreatment, clients displayed substantial decision-making difficulties (compared to the normative sample) on the CDDQ total score (z_{cs} = +1.48), and below average levels of life satisfaction (z_{cs} = -.87). At posttreatment, the corresponding z_{cs} values were .03 and -.27. These results suggest substantial clinical gains on the CDDQ and some gains on the SWLS. In other words, clients' career decision-making difficulties moved from 1.48 standard deviations higher than Swiss young adults to the norm group mean after four to five sessions of individual career counseling. Their subjective well-being, while improved, remained a quarter of a standard deviation below that of the norm group after counseling. We did not analyze the nonequivalent comparison group's scores for clinical significance because this group did not appear to be an appropriate comparison group since their pretreatment CDDQ and SWLS scores suggested that they had few decision-making difficulties and were already experiencing levels of life satisfaction similar to the norm group.

In summary, I recommend that we routinely begin to analyze outcome data for clinical significance using both the Jacobson methods and a z_{cs} if possible or z_{cs} alone if the combined methods are not possible. Brown and Roche (2016) provided normative data for a

variety of different populations on the CDDQ, SWLS, and two other commonly used measures in the career intervention outcome literature—the short form of the Career Decision-Making Self-Efficacy Scale (CDSE; Betz, Klein, & Taylor, 1996) and the Career Thoughts Inventory (CTI; Sampson et al., 1996). If routinely reported, I can imagine that at some time in the future a meta-analysis of the clinical significance of career interventions would be possible.

Need #3: We Need to Conduct Outcome Research with More Diverse Samples

This need is not new—it has been stated by a number of different authors (too numerous to list here) for years. This admonition, however, is often accompanied by an assumption that interventions developed from current career theories will not work for the poor, marginalized, and under resourced because current career theories assume that clients have a lot of volition and can choose careers freely. The poor and marginalized obviously have less volition and so, the thinking goes, current career theories and interventions derived from them will not work. Unfortunately, this assumption has rarely been tested, but has become so reified that it appears to be the closest thing we have to scientific law in our field. I would recommend that we actually put this assumption to test.

For example, Dik and Hansen (2011) tested whether a volition-like variable (perceived control over one's work) moderated the relationship between person-environment fit (P-E fit; Holland, 1997) and job satisfaction and found just the opposite from what we would expect from current assumptions—that the relationship was stronger for those with less rather than more volition. The relationship for the volitional was actually near zero—suggesting that the degree of fit between the work personalities of the more volitional and their work environments had little to do with their satisfaction. Thus, current P-E fit theories might be less relevant to those with more volition (and more relevant to those with little volition). If replicated, these data suggest that P-E fit interventions might be more impactful for those with less rather than more volition, perhaps because those with more volition have more freedom to find better fitting jobs when things do not work. Stated another way, P-E fit might be more

important to those trapped by limited options than those whose choices are more unfettered. I would also hypothesize that helping clients find fitting work or achieve greater fit in their current work might be more important in today's opportunity limiting economy than ever before. By implication it might also be that P-E fit should be considered as another defining characteristic of decent work (Duffy, Blustein, Diemer, & Autin, 2016). In the end, I really think we need to let the data speak for themselves, but we actually need to have data before they can say anything to us.

Summary

In summary, I think that extant meta-analyses have yielded findings that can be used by career practitioners to improve their work with clients experiencing choice-making and job finding difficulties by ensuring that all critical ingredients suggested by the meta-analyses are included in interventions. Collectively the meta-analyses suggested that goal setting, support-building, and efficacy enhancement strategies might be incorporated in work with all clients, although the universality of these components requires further investigation in samples of clients with other types of career difficulties.

I also think that evidence-based career practice can be advanced by research that identifies core outcome constructs that are measured by extant outcome measures, attends to the clinical significance of gains achieved by clients in career interventions, and tests interventions with more diverse clientele. In relation to the latter, we need more research on intervention effectiveness with the underrepresented, under resourced, and marginalized members of our society rather than continuing to operate on the untested assumption that interventions developed from extant theories will not work for them. To do less could be a social injustice to those who need our services most.

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