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2019

Englert, P., & Plimmer, G. (2019). Moving from classical test theory to the evaluation of usefulness : a theoretical and practical examination of alternative approaches to the development of career tools for job seekers. *Journal of Employment Counseling*, 56(1), 20-32. doi:10.1002/joec.12100

<https://hdl.handle.net/10356/105373>

<https://doi.org/10.1002/joec.12100>

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moving from classical test theory to the evaluation of usefulness: a theoretical and practical examination of alternative approaches to the development of career tools for job seekers

Paul Englert and Geoff Plimmer

This article critiques the common use of principles of classical test theory (CTT) as the key means of assessing the effectiveness of career instruments for employment counseling. The authors argue that excessive reliance on CTT has hindered the development of career assessment tools that better meet the diverse and changing needs of those seeking guidance in their career choice. The authors argue for an alternative paradigm based on notions of usefulness. A computerized career tool is evaluated to illustrate the limitations of CTT and the benefit of alternative methodologies for the assessment of instruments designed to provide effective career guidance.

Keywords: possible selves, classical test theory critique, career counseling, career tools

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Classical test theory (CTT) is traditionally the evaluative criterion for career instruments (Kline, 2000). CTT both establishes a set of criteria for the evaluation of career tools and prescribes the rules of engagement for test developers, in turn limiting what assessments will qualify as psychometrically sound (Michell, 2014). These criteria include the type of statistics accepted as evidential (such as correlations), as well as arbitrary criteria for statistical robustness, such as the 0.7 rule for reliability (Lance, Butts, & Michels, 2006). Moreover, CTT places at its core the supremacy of latent constructs and the related acceptance of error in measurement (Borsboom, Mellenbergh, & van Heerden, 2004). The value of CTT within career guidance is, therefore, dependent on its appropriateness as a measurement paradigm. However, the effectiveness of CTT for assessing career guidance instrumentation has had limited examination in the career guidance literature.

A critical examination of the appropriateness of CTT is particularly important now as new, more constructivist forms of career guidance are emerging. Although there are several models of such approaches, the Career Construction Interview (Savickas, 2016) and the life design model (Guichard, 2016) serve as useful exemplars. Both

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are qualitative approaches that rely on meaning making, reflection, and reflexivity to deal with the complexity of career problems. However, despite their appeal and promising success, it is difficult to evaluate these approaches for generalizability. For example, the Career Counseling Innovative Outcomes narrative tool provides good in-depth judgment about the merit of the life design process, but it leaves unanswered what its merit is to, say, an institution dealing with multiple demands, varying client needs, and alternative tools from which to choose (Di Fabio, 2016). The case for such worthy career interventions is particularly hard to make because career tools have traditionally been evaluated by CTT, despite its poor fit as a measure of intervention success.

The requirements of CTT lead to two interrelated outcomes for the development of career tools: first, that career constructs should not be measured directly, and second, that measurement is only possible from a cluster of items that are inter-related (Loehlin, 2004). Thus, respondents to a traditional career inventory receive feedback in the form of prepackaged constructs that supposedly represent their career choice (Lent & Brown, 2006). This reduction of multiple items into latent constructs may be quite relevant in some situations, but not all constructs are latent, and some can be assessed directly (Barlow & Nock, 2009). For example, regarding careers, it may be far more powerful to know that someone wishes to be a writer than that he or she has a relative tendency toward creativity. Specific feedback on the writing one likes to do may be far more informative than feedback on the broad concept of one's comparative level of creativity. The changing nature of work makes latent constructs, such as creativity, particularly difficult to operationalize from the respondent item sets, which may not accurately reflect the changing nature of jobs (Amundson, 2005; National Research Council, 1999).

Career practitioners have long known that directly asking people about their interests is as accurate as determining career choice through an inventory (Spokane & Decker, 1999), potentially negating the need for latent constructs. Measuring latent constructs also requires many, often fatiguing questions (Ackerman & Kanfer, 2009). Counselors must then muddle through a career assessment report to determine how a predefined career construct will ultimately lead to a career choice. In doing so, the counselor may neglect important questions that are vital in vocational choices, such as social and personal barriers.

Researchers who promote a reliance on factor structure do so, in part, as a precursor to internal reliability (Kline, 2000). The reliance on internal reliability is related to the need to demonstrate predictive validity, the criterion often noted as the gold standard for psychological assessment (Gregory, 2015). When the purpose of a psychological assessment is to predict some future outcome, causality matters (Borsboom et al., 2004). However, not all assessments have the goal of being predictive, and therefore the nature of validity, or “fit-for-purpose” evaluation, is application dependent. In employment counseling, for example, the purpose is often to contribute to career exploration. The assessment goal, therefore, is to help one understand and develop thoughts about, and goals for, the future. How an assessment facilitates thinking and can assist the client–counselor relationship is, therefore, likely to be a better evaluative criterion than predictive validity. Despite this, the

marketing of career guidance inventories has long focused on predictive validity, even though their level of predictive validity is weak. The emphasis is on statistically significant results independent of their practical significance (Kirk, 1996). In a meta-analysis of the predictive accuracy of Holland's (1959) interest types, 27 studies on the relationship between interest congruence and job satisfaction noted that the congruence–satisfaction relationship was not significant (Tranberg, Slane, & Ekberg, 1993). In Assouline and Meir's (1987) meta-analysis, the correlation coefficients between job satisfaction and interests ranged from $-.09$ to $.51$ with a mean of $.21$. Correlation coefficients with job stability went no higher than $.25$ and had a mean of $.15$, whereas correlations with outcome variables such as achievement had an average correlation of $.06$. These do not appear to be particularly meaningful figures on which to base life decisions, particularly if one is undecided and has adopted the assessment with the expectation that it will lead to future job satisfaction (Tracey, Robbins, & Hofsess, 2005). Interest measurement in an applied setting, it has long been argued, is about description rather than prediction (Zytowski, 1994). If this is the case, other methods, such as free-text responses, that help people explore their self-concepts and the world of work are likely more useful than a reliance on a measurement model focused on the prediction of future events.

Standardization of responses to establish a comparative normative group is a further area of concern for career assessment rooted in CTT. Standardization makes sense in discussions of constructs such as intelligence and personality, in which the conclusion that one is more or less of a certain relative level on a psychological construct leads to useful comparative decisions about whether to hire one person as opposed to another (e.g., employment selection). However, this logic does not apply to career decisions that are within-person assessments rather than between-persons assessments. The question is not whether one wishes to pursue a career more than someone else but rather which career, among many, the job seeker wishes to pursue. The norms can also be culturally laden and might reflect occupational stereotypes, thus discouraging job seekers from careers for which they have both a capacity and willingness (Englert, Doczi, & Jackson, 2014). The comparative endorsement is meaningless, and it is difficult to see how a career counselor could use comparative data to provide individualized assistance to job seekers.

REDEFINING PSYCHOMETRICS FOR CAREER GUIDANCE TO FOCUS ON EVALUATED USEFULNESS

Loyal adherence to CTT, the standard paradigm prescribed in measurement psychology, can be seen as the breeding ground for a long coming crisis in career assessment when the existing paradigm breaks down (Kuukkanen, 2012; Tafreshi, Slaney, & Neufeld, 2016). Sternberg and Williams (1998) captured the challenge for career theorists very well in the following statements about the intellectual ossification in psychological assessment:

No technology of which we are aware, computers, telecommunications, televisions and so on—has shown the kind of ideational stagnation that has characterized the testing industry. Why? Because in other industries, those who do not innovate do not survive. In the testing industry, the opposite

appears to be the case. Like Rocky I, Rocky II, and Rocky III and so on, the testing industry provides minor cosmetic variants of the same products. . . . These variants survive because psychologists buy the tests and then loyally defend them. (p. 577)

New paradigms for career assessments can help drive the change promoted by Sternberg and Williams (1998; see also Kuukkanen, 2012). These paradigms should reflect new criteria for effectiveness, as well as for adopting alternate forms of assessments unconstrained by CTT. A broader approach to psychometrics should include varied models that aim to shed light on psychological phenomena that are practically useful for clients (Maul, Irribarra, & Wilson, 2016). Suitable psychometric criteria will, therefore, be relatable back to usefulness, and usefulness will, in turn, define what qualifies as acceptable evidence.

The usefulness of a career assessment should have as its main concern the processes and outcomes related to employment counseling, not the internal characteristics of the assessment. In the employment counseling process, useful assessments arguably should provide new information, feedback, and ideas. The facilitated feedback should help to develop a constructive dialogue between counselor and client, summarizing and managing information and increasing client insight and aiding motivation. The feedback should discuss life domains other than work, reflect individual uniqueness, maintain expectancy of finding work, and aid adaptability through the life course (Hartung, 2010; Lent, Brown, & Hackett, 1994; Niles, Yoon, Balin, & Amundson, 2010).

Counselors should use assessments to convey nonevaluative information about a person's future options that are client centered and allow clients to present their unique perception of their future. The feedback, in turn, helps the counselor assist clients in the acquisition of goals—the building block of outcomes, such as client decisions, beliefs, and plans (Whiston, 2002). Arguably, a core criterion of a useful career assessment is the extent to which it facilitates effective goal setting and motivation. The career assessment thus sets the framework for a plan to achieve future states or, as noted many years ago by Cole and Hanson (1975), “Interest inventories should no longer be merely reported or interpreted. They should change behavior” (p. 12).

Usefulness applied to career guidance assessments means that the breadth of constructs commonly used in career psychology, such as in Holland's (1959) RIASEC (realistic, investigative, artistic, social, enterprising, conventional) model, needs to increase as occupational interests are only a small part of career choice. Single-item measures can help do this because many items, such as one measuring a desire for more income, are not latent (Fisher, Matthews, & Gibbons, 2016; Konstabel, Lönnqvist, Walkowitz, Konstabel, & Verkasalo, 2012). Often, single-item questions that ask for expressed choice outperform interest measurements (Borgen, 1986; Spokane & Decker, 1999). Expressed interests are at least as predictive of future career behavior as inventory results and, when combined idiosyncratically by clients, work exceptionally well (Borgen, 1986; Spokane & Decker, 1999).

Construct validity is still important. However, as recommended over half a century ago by Cronbach and Meehl (1955), the emphasis is not only on convergent and divergent validity, but rather to ensure that the understanding of the construct is as complete as possible to maximize usefulness for the practitioner. Construct validity is not simply

a replication of an existing tool (Sternberg & Williams, 1998). The objective is to identify the deeper meaning of constructs by understanding how other psychological concepts interrelate, thus creating a system that gives a construct practical meaning. This nomological network increases the understanding of the likely inferences that can be drawn from the assessment and, in turn, assists the counselor and job seeker in the career guidance process (Cronbach & Meehl, 1955; McWilliams, 2012).

New methods of evaluating assessment tools are likely to include the perspective of both the job seeker and the counselor within an applied setting. Scriven's (2015) evaluation checklist framework posits usefulness as the synthesis of measures of worth (i.e., return on the investment) and significance (i.e., a positive impact derived from the assessment for the job seeker or counselor). Evaluation methodologies will force career assessments to demonstrate not only significance to the job seeker and career counselor but also comparative worth when contrasted against other techniques, which may achieve a similar outcome at less cost or more efficiently (Davidson, 2005). The analysis is more likely to be a mix of both qualitative and quantitative techniques to identify limitations and strengths of the approach (Kelle, 2006) and is also likely to be a mix of both theoretical and practical usefulness to practitioners and clients (Davidson, 2005).

THE CONCEPT OF POSSIBLE SELVES IN CAREER GUIDANCE

The concept of *possible selves* includes affect, cognitions, relations with others, private beliefs about the self, skills and interests, values, and socioeconomic conditioning (Markus & Nurius, 1986). Possible selves include expectancies that relate to motivation and cognition about the future and are therefore well suited to career interventions.

Possible selves also have strong applicability to career interventions because of their relationship to well-being and motivation (Pisarik & Shoffner, 2009; Robinson, Davis, & Meara, 2003). The relationship between possible selves and career guidance is also evident in research on coping, understanding life transitions, and increasing resistance to setbacks (Cross & Markus, 1994). Possible selves have a strong fit with good career counseling practice because of their link to a positive future focus through the representation of highly personalized goals (Hill & Spokane, 1995; Plimmer, 2011; Plimmer, Smith, Duggan, & Englert, 2000). Possible selves are also changeable (Cross & Markus, 1991). Thus, possible selves can help with adaptability (Frazier & Hooker, 2006; Plimmer, 2011; Savickas, 1997).

FUTURESELVES: A HOLISTIC ALTERNATIVE APPROACH TO CAREER GUIDANCE

Futureselves (www.futureselves.com) is a commercialized tool that assists in career guidance across organizations ranging from schools and public job-seeker centers to private consultancies offering career transition programs. The Futureselves computerized questionnaire assesses a person's possible selves across four life domains: skills and interests, career options, values and self-beliefs, and lifestyle.

In the Futureselves inventory, single items assessing various life domains are mapped to provide a holistic approach to employment counseling. The original generation of items for the inventory came from a diverse sample of participants who provided representations of themselves in the future using cued free-text responses to questions, which were then content analyzed into common themes and life domains (Englert, 1999). Thus, the resulting questionnaire consisted of various single items assessing possible selves across multiple life domains.

The Futureselves inventory also includes free-text fields so that there is no restriction to the items job seekers can use to describe their future self-perceptions across life domains. After completing the inventory, if job seekers feel that the picture of their possible selves is incomplete, they can add items, noting possible selves relevant to their future. These individual responses are added to the inventory over time, resulting in a variety of item banks to be used with different cohorts. In this way, face, content, and construct validity evolve and are not static.

The Futureselves instrument has reasonable test–retest properties, 65% stability, and agreement between Time 1 and Time 2 responses on the level of endorsement of a given possible self over a month (Englert, 2001). When viewed in light of a nomological network of related constructs, the Futureselves assessment has reasonable construct validity with responses to Futureselves profiles, explaining between 23% and 27% of the variance in life satisfaction, self-esteem, and optimism/pessimism (Plimmer, 2002).

The Futureselves inventory also assesses the emotional salience of these possible selves (5-point scale ranging from *strong hope* to *strong fear*), with respondents providing ratings as to the likelihood of realizing their possible self in the future as well as whether the identified possible self had occurred previously. The measure of likelihood was designed to tap into the levels of self-efficacy (Bandura, 1977) across life domains held by a respondent and map directly into expectancy theory (Vroom, 1964). These hopes and fears are then presented graphically to the client, with the level of hope and fear plotted on the *y*-axis and the level of likelihood question plotted on the *x*-axis (see Figure 1). Each of the shaded areas of Figure 1 provides unique information to counselors to help better assist their client. Possible selves that are hoped for but are not likely to happen are “dreams”; possible selves that are hoped for and are likely to happen are “opportunities”; possible selves that are feared but are not likely to happen are “dreads”; possible selves that are feared and are likely to happen are “threats.” Counselors can use the boxes in the figure to help facilitate the counseling session, for example, exploring with the client how to make opportunities more likely and thus become dreams, or decreasing the likelihood of fears occurring and thus become dreads and not threats.

Comparative Evaluation of Futureselves

The Futureselves inventory is an attempt to operationalize possible selves for career guidance. Demonstrating usefulness requires an ecologically valid evaluation, which in turn requires assessment of the diagnostics’ value, compared with similar alternative methods, to determine the overall significance and worth of the career guidance

Degree of Fear and Hope	Very Strong Hope			– Self-employed	
	Strong Hope				+ Agriculture, etc.
	Hope		– Arts, information, recreation, sports – Part-time	– Sales and marketing + Paid work + Manufacturing distribution + Engineering construction + Computing, etc. + Juggling different jobs	
	Fear	– Hospitality, etc. – Education, etc. – Child care	– Voluntary work + Office administration/finance + Science		
	Strong Fear		– Law and order	+ Unskilled work	
	Very Strong Fear	+ Benefit	+ Unemployed		
		Very Unlikely	Unlikely	Likely	Very Likely
		Likelihood			

FIGURE 1

Example of Graphical Feedback for Lifestyle Possible Selves

Note. The gray shades demarcate four categories of future selves as identified by a user (see text for explanation). The + and – symbols represent whether the identified possible self had occurred previously. The + symbol indicates the client has experienced this possible self before, whereas the – symbol indicates the possible self. No symbol indicates that the client is unsure of whether the self has occurred previously in his or her life. Thus, the counselor can see if the person is only relying on past selves when thinking about his or her future.

methodology. Usefulness requires that the new assessment should also demonstrate additional cost–outcome benefit for the job seeker over an alternative method. As Sternberg and Williams (1998) commented, to have a measure that is nothing more than a replica of an existing measure is of limited value to the discipline. Comparative value is a significant omission in the assessment of many career tools.

To illustrate the concept of comparative evaluation, one would need a comparative evaluation of the Futureselves inventory to assess an alternative cost-effective method for achieving the same given purpose: to identify possible goals for one's future. Englert (2001) compared Futureselves with a structured brainstorming methodology called *possible selves mapping* (Shepard & Marshall, 1999) that likewise aims to uncover an individual's possible selves. A full review of Englert's study is beyond the scope and purpose of this article. However, an examination of the key findings illustrates the value of using comparative evaluation for career assessment development, as well as identifying likely limitations and weaknesses in the practical application of the assessment. In Englert's study, the Futureselves inventory generated four times as many possible selves compared with brainstorming, and participants rated Futureselves as a more thorough representation of themselves in the future than brainstorming. Futureselves was seen as a better method of identifying hopes and fears for the future than brainstorming (Englert, 2001). Participants also felt that Futureselves gave them a more thorough picture of their thoughts on their future (Englert, 2001). The Futureselves tool, however, was not rated as better than brainstorming at providing a useful framework from which to create goals (Englert, 2001).

The comparative study by Englert (2001) illustrates that the suggestion of ideas (via Futureselves) leads to richer and more meaningful self-descriptions than self-generated ideas via brainstorming, but the suggestion of ideas in itself is insufficient to make sense of and plan for the future. For this, career counseling seems necessary.

Evaluation of Futureselves in an Applied Setting

Evaluation methodology requires a more comprehensive assessment than comparative value, specifically, assessment in a setting with high ecological fidelity. The evaluative method is relatively detailed, with multiple criteria assessed to form conclusions (Davidson, 2005; Scriven, 2015), and the benefits of an evaluative approach are evident in a review of key findings from an evaluation study. Indeed, one benefit of an evaluative approach is that the reporting is designed to be practitioner-centric, providing the information required by key stakeholders to make informed decisions while referencing the source text that provides the detailed analysis (Scriven, 2015). For the current article, the initial assessment of the diagnostic involved an evaluation of the Futureselves inventory by job seekers and their case managers, who were employed by the New Zealand government to help long-term job seekers find work. An executive summary of the key findings relevant to this article follows, with the source of more detailed analysis cited.

Case managers went through a 1-day training course on how to use the Futureselves inventory, with interviews posttraining indicating that the tool was quickly understood, independent of previous

experience in career guidance (Englert, 2001). When using the Futureselves tool as part of case management, case managers noted that they were able to determine the desired future states of job seekers quickly (Englert, 2001). Moreover, they were able to identify various goals across life domains, resulting in more meaningful sessions with job seekers. Both job seekers and case managers also reported greater clarity and enjoyment of their interaction in comparison with standard case management (Englert, 2001).

Although there was greater clarity of the goals to be achieved, the intervention did not result in tangible behavioral change or outcomes for the job seeker (Englert, 2001). Job-seeking behavior did not increase, nor was job acquisition higher in the intervention group when compared with a control group (Englert, 2001). Although there were statistically significant changes in well-being reported by those who went through the intervention, the differences in real terms were minimal and of limited practical significance (i.e., the change in real terms was not meaningful; Englert, 2001).

Case managers did gain greater insight into their clients far quicker and could identify suitable job choices and career steps more efficiently (Englert, 2001). However, this increased knowledge of the job seeker also led to potential goal confusion, with case managers having some difficulty resolving the competing goals of job seekers (Englert, 2001). An example of this goal confusion was a job seeker who wanted a professional career in the future but had little desire to undertake the required study in the present time. Attempts to address this conflict were not necessarily met positively by the job seeker, and the case manager's increased insight did not necessarily lead to improved relations between the job seeker and the case manager (Englert, 2000). Organizational constraints further hindered the process, with case managers experiencing task conflict when helping job seekers while enforcing beneficiary obligations and providing intensive assistance but within an allotted time frame (Englert, 2001).

Together with an assessment of comparative merit, the evaluation conducted and reported in the manner noted provides a comprehensive and balanced review of the strengths and limitations of an assessment that is contextually relevant and practically useful. The information derived from the evaluation can be used by the practitioner to tailor effective guidance to the job seeker with an understanding of what supporting tools and frameworks need to be introduced to achieve desired outcomes. In this way, the evaluation approach addresses the limitations of CTT, in which the evidence base is simply variance accounted for by the assessment, with little guidance on the practical significance of the findings.

Although an applied evaluation provides evidence for the strengths and limitations of the Futureselves assessment, one study should not represent the total of evidence that determines the usefulness of the tool. Rather, evaluation and improvement should be a constant process, and together they form a system for the development of assessments. Evaluations of usefulness and usability of the Futureselves assessment include case studies and surveys (Plimmer, 2002). Where common trends occur, these trends affect the ongoing development of the assessment and user guidelines for the application of the diagnostic. An example of this evolving development process includes the development of new item banks for different cohorts, as well as item deletion from existing item banks due to low endorsement by users. A direct result of this ongoing evaluation of usefulness is that the assessment does not remain static but develops constantly based on regular feedback. The Futureselves assessment, therefore, makes a conscious choice to be dynamic, not static, guided by the concept of usefulness. This process of constant evolution is not practically possible through adherence to principles of CTT because changes in the assessment nullify existing supporting statistics.

SUMMARY AND CONCLUSION

This article critiques the appropriateness of CTT as the key criterion for career inventories and provides an example of how the usefulness of inventories can instead be assessed with evaluative frameworks. Approaching the assessment of career

tools in this manner not only provides information on the measurement properties of the tool but is more informative for the practitioner, providing an assessment of the strengths and limitations in a way that CTT lacks. For example, the findings from the comparative study noted earlier (Englert, 2001) indicate that the strength of the Futureselves assessment for career guidance appears to be the encouragement of participant self-knowledge, which creates a starting point for career and life counseling. Further evaluation of Futureselves in applied settings reinforces that the key benefit derived from the assessment is the provision for accelerated, holistic counseling with clients to help make the process as efficient as possible (Bannister, 1982). However, clarity and goal setting resulting from the assessment are unlikely to occur unless aided by facilitated career guidance and support materials for the job seeker and career guidance professionals. Moreover, although the assessment results in a more meaningful interaction between the counselor and job seeker, it does not necessarily translate to greater job search behavior or improved relations when working with long-term job seekers.

Having evaluated the usefulness of the Futureselves inventory, this study's findings can then be positioned within existing counseling frameworks to provide career counselors with guidelines on how they might use the assessment to best advantage. The results from the evaluation of Futureselves align with Amundson's (1998) theoretical distinction between problem-defining and problem-resolving assessment procedures. Futureselves appears to be a problem-defining tool, with the resolution to the problem coming from the skilled application of counseling techniques that turn the defined problem into a resolution plan, incorporating specific strategies such as goal attainment frameworks and job search strategies (Curran, 1998).

Evaluation of career assessments should also influence career theory. The evaluation of the Futureselves assessment indicates that career goals compete with other life goals in the present and also reveal how one thinks about one's future and the impact that this has on one's present behavior. The resolution of these competing goals is as much a part of career counselors' role as simply stating what careers the job seeker should pursue. Although this resolution of competing goals aligns with Krumboltz's (1994) life stage theory, Super's (1953) stage theory, and Schlossberg's (1981) transition theory, none of these theories fully account for the present state impact of competing goals that may exist in either the present or the future.

Theory and assessment development, therefore, can be seen to exist in a cybernetic loop, both reinforcing each other and arguably excluding other approaches. A focus on usefulness in applied settings will create a more dynamic relationship between theory and practice, which will then affect the frameworks that the counselor uses to feed back results, the supporting documentation provided to the counselor, and how a given intervention combines with complementary measures.

Future research on career assessments and interventions should focus more on usefulness than CTT, which will require evaluating the impact of methodologies and not just the assessment design (e.g., Scriven, 2015), and also the publishing criteria of journals with a focus on applied psychology. Publications need to report both strengths and limitations of the assessment, as well as potential contextual constraints on the

assessment's application to assist career practitioners. Finally, developers of career assessments need to look for novel approaches to add value to both job seekers and career practitioners, rather than mere variations on existing models.

The prescriptive nature of CTT may hinder the development of more effective methodologies that hold promise for career clients but do not fit the philosophical and practical assumptions of CTT (Di Fabio, 2016). Rehfuess and Di Fabio's (2012) validation of the Future Career Autobiography is one such example of how to validate a constructivist tool in a comparative and longitudinal study.

By giving prominence to usefulness, researchers will be encouraged to recognize the context of career guidance, which should help the ecological fidelity of reported findings. The usefulness concept may help legitimize previously neglected constructs used in career guidance, which will result in both job seekers and career counselors having access to the most appropriate interventions that counseling can offer.

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