

Dysfunctional Career Decision-Making Beliefs: A Multidimensional Model and Measure

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Abstract

Dysfunctional beliefs are among the most prevalent, severe difficulties many individuals face in the process of making career decisions. The goal of the present study was to develop and test a new multidimensional measure of *Dysfunctional Career Decision-Making Beliefs (DCB)*. The DCB questionnaire elicits individuals' beliefs in five aspects of career decision-making: the role of chance or fate, the criticality of the decision, the role of significant others, the role of professional help, and perceived gender barriers. Study 1 used exploratory factor analysis and cluster analysis to test the psychometric properties and the five-factor structure of the DCB with a sample of 937 young adults deliberating about their future career. Study 2 used confirmatory factor analysis to validate the structure of the DCB with another sample of 1,251 young adults and analyzed the associations between individuals' DCB Scale scores and career decision status to test its concurrent validity. The results supported the proposed multidimensional model of dysfunctional beliefs. Implications for future research and career counseling are discussed.

Keywords

career assessment, career decision-making difficulties, multidimensional assessment, dysfunctional career beliefs, career decision-making

One of the challenges that vocational psychologists and career counselors often face is identifying and dealing with their clients' *dysfunctional beliefs* (e.g., Elliot, 1995; Kleiman et al., 2004; Ludwikowski, Vogel, & Armstrong, 2009; Osborn, Peterson, Sampson, & Reardon, 2003). Certain clients expect to find their perfect career during career counseling (e.g., Sampson, McClain, Musch, & Reardon, 2013); others believe that a career choice is a once-in-a-lifetime decision that they will not be able to change in the future (Nevo, 1987). Such beliefs might lead counselees

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to avoid beginning the career decision-making process or go through the process but then experience regret or a lack of commitment to their chosen path. Identifying clients' beliefs about career decision-making and then challenging and confronting them are therefore essential for effective career counseling.

Previous research on dysfunctional beliefs has consistently found them to be among the most prevalent difficulties in career decision-making. Several studies reported that the dysfunctional beliefs scale of the Career Decision-Making Difficulties Questionnaire (*CDDQ*; Gati, Krausz, & Osipow, 1996) has one of the highest scale means of all the difficulty categories in a number of cultural contexts (e.g., Babarovic & Sverko, 2018; Gati, Ryzhik, & Vertsberger, 2013; Gati et al., 1996; Kelly & Lee, 2002; Lancaster, Rudolph, Perkins, & Patten, 1999; Mau, 2001; Mateos, Torregrosa, & Cruz, 2010). Moreover, dysfunctional beliefs have been shown to be the difficulty category that young adults are least aware of (Amir & Gati, 2006). The undesirable consequences of dysfunctional beliefs, and individuals' lack of awareness of their own such beliefs, highlight the importance of an evidence-based measure that career counselors can use to elicit these beliefs.

In the present research, we adapted Krumboltz's (1990) notion of dysfunctional beliefs. We define such beliefs as those that impede career decision-making due to their unfavorable consequences (e.g., lack of motivation, procrastination, and regret). For instance, individuals who believe others know better than they do what career they should choose are less likely to be motivated to invest time and effort in making a decision; others who view career choice as a once-in-a-lifetime decision are more likely to prolong the process in an attempt to avoid making the wrong choice (Sampson et al., 2013). We prefer the term "dysfunctional" to alternatives such as "irrational" (Nevo, 1987) or "negative" (Bullock-Yowell, Peterson, Reardon, Leierer, & Reed, 2011), because such beliefs often lead to undesirable consequences such as lack of investment in the decision-making process or disappointment with the counselor. We claim that beliefs should be evaluated on the basis of their effect on the career decision-making process itself and not be viewed as inherently "irrational" or "negative."

Previous Theories and Measures of Dysfunctional Career Beliefs

The psychological study of the connections between beliefs as forms of cognition, on one hand, and behaviors and goals, on the other, began during the cognitive revolution in the second half of the 20th century. Early references to dysfunctional beliefs emerged with the development of cognitive approaches to clinical counseling and therapy in the 1960s and 1970s—Ellis's (1962, 1977) rational-emotive therapy, Beck's (1970, 1976) cognitive therapy, and Meichenbaum's (1977) cognitive behavior modification. Vocational research too has acknowledged cognition as a key factor affecting career development and decision-making (Keller, Briggs, & Gysbers, 1982; Lent, Brown, & Hackett, 1994; Peterson, Sampson, & Reardon, 1991; Reardon, Lenz, Sampson, & Peterson, 2011; Sampson, Peterson, Lenz, Reardon, & Saunders, 1998). Contributions to the vocational literature include case studies of individuals maintaining beliefs that impede career development and decision-making and suggest protocols for the treatment of specific dysfunctional beliefs (e.g., Corbishley & Yost, 1989; Dryden, 1979; Lewis & Gilhousen, 1981; Nevo, 1987; Thompson, 1976). Indeed, certain beliefs, expectations, and attitudes have been associated with adaptive career decision-making, whereas others have been shown to lead to undesirable, detrimental consequences, such as avoiding the process, beginning the process but not finishing it, or making less than optimal decisions (Conklin, Dahling, & Garcia, 2013; Creed, Fallon, & Hood, 2009; Gati et al., 1996; Ito & Brotheridge, 2005; Lent & Brown, 2013).

Over the years, numerous terms have been suggested to denote the (dys)functionality of beliefs about careers, including *misconceptions* (Thompson, 1976), *self-defeating assumptions* (Dryden, 1979), *myths* (Lewis & Gilhousen, 1981), *private rules* (Krumboltz, 1983), *self-beliefs* (Borders

& Archadel, 1987), *irrational expectations* (Nevo, 1987), *dysfunctional cognitions* (Corbishley & Yost, 1989), *career beliefs* (Krumboltz, 1994), *faulty self-efficacy beliefs or outcome expectations* (Brown & Lent, 1996), *dysfunctional career thoughts* (Sampson et al., 1998), *negative career thoughts and feelings* (Kelly & Shin, 2008), and *negative career thoughts* (Bullock-Yowell et al., 2011).

This variety of terms, which reflects various approaches to dysfunctional career beliefs, corresponds to the variety of measures developed. Krumboltz (1994) developed the *Career Beliefs Inventory*, which comprises 25 empirically derived scales and contains 96 items with 2–8 items per scale. Sampson and his colleagues introduced the *Career Thoughts Inventory (CTI)* (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996a; Sampson et al., 1998), which is a 48-item measure based on the cognitive information processing theory and comprises eight theoretically based content categories. When it was empirically tested, three factors emerged—decision-making confusion, commitment anxiety, and *external conflicts*, with 14, 10, and 5 items per scale, respectively (Sampson et al., 1996a). A third measure for assessing dysfunctional beliefs is the *Career Myths Scale (CMS)* (Stead & Watson, 1993), with 27 items and four empirically validated factors, with 7, 7, 2, and 2 items per factor. A dysfunctional beliefs scale is also included in the *CDDQ* (Gati et al., 1996). However, the assessment of such beliefs by the *CDDQ* is insufficient—studies have consistently found that this scale has the lowest internal consistency reliability estimate, which was even unsatisfactory at times (Gati, Osipow, Krausz, & Saka, 2000; Gati et al., 2013; Kleiman & Gati, 2004; Xu & Tracey, 2014). The low internal consistency estimate shows that endorsing a particular dysfunctional belief is not necessarily associated with endorsing other such beliefs and indicates that these beliefs seem to be a multidimensional construct.

The preceding review of previous theoretical approaches to and measures of dysfunctional beliefs suggests that only a multidimensional measure can provide career counselors with the means to identify their clients' beliefs. In addition, since eliciting and dismantling these beliefs is one of the prominent challenges career counselors face, it is important to have a theoretically based, reliable, valid measure of dysfunctional beliefs about career decision-making.

The Proposed Model of Dysfunctional Career Decision-Making Beliefs (DCB)

The following assumptions underlie our proposed multidimensional model of DCB. First, we use the term *dysfunctional beliefs* to describe beliefs that lead to undesirable consequences in the career decision-making process or its outcomes. Specifically, such beliefs may (a) prevent individuals from entering the process, (b) impede or even halt their advancement, or (c) decrease their likelihood of making an optimal career decision. Dysfunctional beliefs vary in their severity—their undesirable effect on career decision-making. Thus, beliefs can be placed on a continuum ranging from functional to dysfunctional on the basis of their effect on individuals' career decision-making. Second, we assume that various cognitive and affective mechanisms mediate the detrimental effects of dysfunctional beliefs. These include reduced motivation to engage in decision-making, lower career decision-making self-efficacy (CDSE), greater procrastination, a greater tendency to engage in counterfactual thinking, unjustified elimination of occupational alternatives, an extreme level of effort invested in the process (either extremely low or extremely high), and greater anxiety and stress. Third, we assume that individuals can hold any number of dysfunctional beliefs, ranging from none to many, and that various combinations are possible. Discovering that an individual holds a particular dysfunctional belief does not necessarily indicate that the individual holds others (i.e., such beliefs are fairly independent).

In line with these assumptions, we found that previous measures of career beliefs involve four types of beliefs that are linked with detrimental consequences to career decision-making: the role of *chance or fate* (Nevo, 1987; Stead & Watson, 1993), the *criticality* of the decision (Nevo, 1987;

Thompson, 1976), the role of *significant others* (Nevo, 1987; Sampson et al., 1996a, 1998), and the role of *professional help* (Nevo, 1987; Stead & Watson, 1993). Other types of beliefs included in previous measures were either not content-specific (e.g., *commitment anxiety*; Sampson et al., 1996a, 1998) or not specific to career decision-making (e.g., *self-esteem myths*; Stead & Watson, 1993). We also decided to include a fifth belief involving perceived gender barriers, in light of the major role such beliefs play in career decision-making (Gadassi & Gati, 2009; Levin & Gati, 2015). The DCB questionnaire was designed to assess these five types of beliefs (see Instrument in Method section and the items in Appendix A).

The role of chance or fate. This dimension refers to how strongly individuals believe that chance or fate determines their career path and thus do not invest enough time and effort in career decision-making. Recent theoretical approaches to vocational behavior have acknowledged the increasing role of chance events in career development in the contemporary world of work (e.g., chaos theory of careers; Bright, Pryor, & Harpham, 2005; planned happenstance theory, Mitchell, Levin, & Krumboltz, 1999; career adaptability, Savickas, 1997). These theories encourage individuals to be more open to new possibilities and put greater effort into the lifelong process of career development. In contrast, the chance or fate belief is held by individuals who minimize their own involvement in career planning and decision-making, possibly because of their perceived external locus of control. Indeed, research has shown that an internal locus of control is more adaptive than an external one in making career decisions (Gadassi, Gati, & Dayan, 2012; Levin, Willner, & Gati, 2017).

Criticality of the decision. This dimension refers to how strongly individuals think a career decision is a once-in-a-lifetime decision and hence a crucial choice. It resembles the *misconceptions of singularity and finality* belief originally presented by Thompson (1976). While believing that career decisions are important and investing effort in the decision process is considered adaptive (Gadassi et al., 2012), treating a career decision as if it were a matter of life or death is somewhat dysfunctional (Nevo, 1987). In the dynamic contemporary world of work, individuals often need to make career changes during their lifetime (Pryor & Bright, 2014; Savickas, 1997). Therefore, considering the present choice to be so crucial seems more likely to cause stress and could lead to attempts to escape from the need to make a decision (Lipshits-Braziler, Gati, & Tatar, 2016), which would impede advancement in the process.

The role of significant others. This dimension focuses on how strongly individuals think that significant others (e.g., friends or family) can assess their abilities and their genuine preferences or know which career path they should choose better than they themselves can. This may lead them to assign excessive weight to significant others' opinions. Consultation with significant others may yield beneficial advice and is the way that some individuals tend to make decisions (e.g., Gati & Levin, 2012; Harren, 1979; Scott & Bruce, 1995) or cope with their career decision-making difficulties (Lipshits-Braziler et al., 2016). However, great dependence on others or an excessive desire to please them when making a career decision is often maladaptive (Gadassi et al., 2012; Lipshits-Braziler, Gati, & Tatar, 2017). This scale differs from the external conflicts scale of the CTI, which focuses on *disagreements* with significant others.

The role of professional help. This dimension refers to how strongly individuals believe that a career counselor can guide the individual to a specific career alternative. Individuals may expect career assessments to discover a single best career alternative. Previous research has often discussed dysfunctional beliefs regarding professional help in career decision-making in terms of misconceptions or irrational expectations about psychological tests (Thompson, 1976; Tinsley & Bradley, 1986). Nevo (1987) included irrational expectations regarding counseling in her list of such

misconceptions. Later, Stead and Watson (1993) introduced the *test myths* component of their CMS. The items in this component focused on beliefs involving the value of ability tests. In our proposed professional help scale, we also include dysfunctional beliefs about the career counseling process and the “magical” role of career counselors.

Gender. While a gender-focused category was not included in previous measures of dysfunctional career beliefs, research has shown that gender stereotypes can already be observed in early childhood: Both boys and girls classify occupations by gender and aspire to pursue occupations that are stereotypically gender appropriate (Gottfredson, 1981; Hartung, Porfeli, & Vondracek, 2005; Trice & Rush, 1995). Gender-biased perceptions of occupations are also often present in young adults (Gadassi & Gati, 2009). Indeed, individuals often limit the set of occupations or careers they consider to be potentially suitable on the basis of misconceptions and imagined barriers (Levin & Gati, 2015). Addressing the importance of gender-related beliefs in career decision-making, this dimension refers to how strongly individuals believe that their gender narrows down the range of career options open to them. Such beliefs may hinder career decision-making by limiting the range of alternatives considered by the individual during prescreening (Gati & Asher, 2001), which in turn may lead to a less-than-optimal career choice (Levin & Gati, 2015).

The Goals of the Present Research

We designed two studies to develop our proposed multidimensional measure of dysfunctional career decision-making beliefs and test its psychometric properties. We had two objectives: (1) to shed light on the construct using the DCB questionnaire and (2) to provide career counselors with a theoretically based and empirically supported model and an associated measure, which would allow them to discover their clients’ dysfunctional beliefs about career decision-making. The specific goals of Study 1 were (a) to investigate the psychometric properties of the DCB questionnaire and (b) to delineate the structure of the five categories using exploratory factor analysis and cluster analysis. The goals of Study 2 were (a) to test the structure of the DCB questionnaire’s scales using confirmatory factor analysis and (b) to test its concurrent validity using career decision status as the criterion. With respect to the latter goal, we hypothesized that for all five scales higher scores would be associated with a less advanced career decision status.

Study 1: The Development and Initial Testing of the DCB Questionnaire

The goal of Study 1 was to develop and test the psychometric properties of the DCB questionnaire. The DCB was embedded in an Israeli self-help career planning website. We predicted that the five proposed scales would be adequately differentiated in exploratory factor analysis and emerge as distinct in cluster analysis and that the scales would demonstrate adequate internal consistency reliability. On the basis of the previous results regarding the low internal consistency of the dysfunctional beliefs scale of the CDDQ, we predicted moderate to low intercorrelations among the five scales.

Method

Procedure and Participants

The questionnaire was embedded in the *Future Directions* website (a free, anonymous, Israeli self-help public service, www.kivunim.com) aimed at helping individuals make career decisions (among other such questionnaires—the CDDQ, the Emotional and Personality-related Career decision-making Difficulties questionnaire [*EPCD*], career decision-making profiles [*CDMP*], and the Strategies of Coping with Career Indecision questionnaire [*SCCI*]). The data were collected from deliberating

individuals who entered the website on their own initiative and chose to fill out the DCB questionnaire. The participants received personalized feedback about the five categories of career beliefs on the basis of an analysis of their responses. The time needed for completing the questionnaire varied from 5 to 8 min. The participants were 596 (63.6%) women and 341 men. Their mean age was 24.12 ($SD = 5.88$, interquartile range = 20–25); 807 (86.1%) reported having attained the Israeli high-school matriculation certificate.

Instrument

The DCB was developed on the basis of the five proposed categories, with several items representing each category. Each item was written so as to represent one of the five dysfunctional belief categories, and its representativeness was first tested by asking four vocational psychologists and then eight graduate students to assign 77 items to the five dimensions; 20 items that were misclassified were deleted. We then collected data from four pilot studies of young adults who were deliberating about their future career or major ($n_1 = 379$, $n_2 = 475$, $n_3 = 323$, and $n_4 = 401$, total $N = 1,578$). By analyzing the data, we reduced the overall number of items in the questionnaire at each step (from 57 to 44, then 35, 22, and 16), using item analysis and eliminating the items that had the lowest correlations with other items in the same scale. The participants were asked to rate, on a 9-point Likert-type scale, how much they agreed with each statement (1 = *don't agree at all*, 9 = *highly agree*). The questionnaire began with a warm-up item: "Choosing a career that suits my preferences is important, as it will determine whether I will be satisfied with it" (which 98.6% of the participants marked 5 or greater, showing that they were indeed concerned about their career decision). Each of the other 15 statements represented one of the five dysfunctional belief categories, with 3 items per scale. For example, "I believe that choosing a career is a onetime lifelong commitment" represented the *criticality* category. The 16 items of the English version of the DCB questionnaire are listed in Appendix A, and the online English version is available at <http://cddq.org> (retrieved October 8, 2017).

Preliminary Analysis

First, we computed the five DCB scale scores (the mean of the 3 items in each of the scales), and the DCB total score (the mean of the five scales). Then, five t tests were performed to test for gender differences in the five DCB scales. After the Bonferroni correction for multiple comparisons (corrected $\alpha = .01$) was applied, only one gender difference emerged: Men ($M = 3.59$, $SD = 2.15$) reported having more gender-related dysfunctional beliefs than women ($M = 2.95$, $SD = 2.02$; $t[670.84] = 4.47$, $p < .001$, Cohen's $d = 0.30$). Since there was only one gender difference, the analyses in the Results section are reported across gender.

Results and Discussion

Psychometric Properties of the DCB Questionnaire

The means and standard deviations for each of the five scales are presented on the left-hand side of Table 1. The median Cronbach α reliability of the five scales was .81; the reliabilities of all of the scales were above .70, which is considered acceptable given the small number of items per scale (Nunnally & Bernstein, 1994). Specifically, the Cronbach α reliabilities were .75, .72, .82, .81, and .83 for chance or fate, criticality, significant others, professional help, and gender, respectively; the Cronbach α of the 15 items was .80. We also computed the correlations between each item and the five scale scores (with the item itself excluded from its own scale score). This analysis revealed that all the items were more highly correlated with their own scale (median = .66, interquartile

Table 1. The Means and the Standard Deviations of the Dysfunctional Career Decision-Making Beliefs Questionnaire (DCB) Scale Scores in Study 1 and Study 2 and the Difference Between the Scale Scores in the Two Studies.

Scale	Study 1 (N = 937)		Study 2 (N = 1,251)		t	Cohen's d
	M	SD	M	SD		
Chance or fate	2.35	1.30	2.59	1.49	4.03***	0.17
Criticality	5.14	1.80	5.18	1.85	0.49	—
Significant others	2.41	1.38	3.83	1.89	20.24***	0.86
Professional help	3.76	1.71	4.36	1.72	8.03***	0.35
Gender	3.18	2.09	3.69	2.18	5.51***	0.24
Total DCB	3.37	1.04	3.93	1.20	11.43***	0.50

Note. *** $p < .001$.

Table 2. Intercorrelations Among the Five Scales of the Dysfunctional Career Decision-Making Beliefs Questionnaire in Study 1 (N = 937; Below the Diagonal) and Study 2 (N = 1,251; Above the Diagonal).

Scale	CF	Cr	SO	PH	G
Chance or fate (CF)	—	.15	.31	.29	.30
Criticality (Cr)	.10	—	.27	.38	.25
Significant others (SO)	.35	.28	—	.41	.25
Professional help (PH)	.25	.22	.28	—	.28
Gender (G)	.20	.21	.20	.25	—

Note. All correlations are statistically significant ($p < .01$).

range = .60 to .69) than with the other four scale scores (the correlations between each item and any of the other scales were less than .34).

The internal structure of the DCB items and the five scales

Exploratory factor analysis. Exploratory factor analysis was conducted with a varimax rotation to derive the structure of the factors. Five factors emerged with an eigenvalue above 1 (the total variance accounted for was 71.06%). Each of the five factors included only the 3 items from one of the categories, reflecting a perfect match. The percentage of variance explained by the five rotated factors varied from 12.91% to 14.99%, showing that all five factors contributed significantly to the variance accounted for. All 15 items loaded highest on the factor they belonged to, with the item loadings varying from .70 to .87 (median = .83, interquartile range = .80 to .84). The loading of all items on the factors they did not belong to was less than |.21|.

The intercorrelations among the five scales. The intercorrelations among the five scale scores are presented in Table 2, below the diagonal. The median of these correlations was low: .26, interquartile range = .21 to .28 (range = .10 to .41), reflecting an appropriate differentiation among the scales. The highest correlation (.41) was between the role of significant others and the role of professionals, showing that individuals who believe that a career decision would be better made by significant others tend to have the same belief about the role of career counselors.

Cluster analysis. To further explore the structure of the items, we carried out another exploratory investigation—a cluster analysis of the intercorrelations among the 15 items using ADDTREE (Sattath & Tversky, 1977). The clustering structure presented in Figure 1 adequately summarizes the pattern of intercorrelations among the 15 items (the linearly accounted for variance was 94.2%).

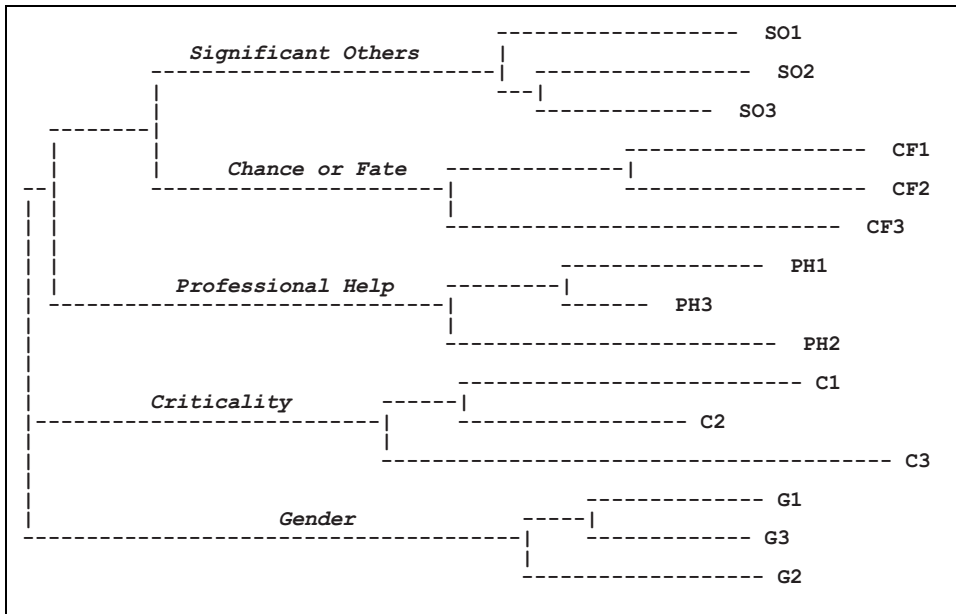


Figure 1. Cluster analysis of the five scales of the Dysfunctional Career Decision-Making Beliefs questionnaire in Sample 1 ($N = 937$). Linearly accounted for variance is 94.2%.

As can be seen in Figure 1, the 3 items that comprise each of the five scales are clearly grouped into a distinct cluster. However, this analysis did not allow us to test whether the five scales can be combined into a single total score; this question was explored in Study 2.

Age differences. In addition, we tested the associations between the participants' age and the five DCB scales. The results of the Kolmogorov–Smirnov test of normality indicated that age was not distributed normally in our sample, $D(937) = .22, p < .001$. We therefore used bootstrapping to test the associations between the participants' age and the five DCB scales. Bias-corrected bootstrap 95% confidence intervals were computed from 2,000 bootstrap samples (Efron & Tibshirani, 1994). We found that age was negatively correlated with dysfunctional beliefs involving criticality ($r = -.24; [-.18, -.29]$), significant others ($r = -.11; [-.06, -.17]$), and professional help ($r = .11; [.04, .17]$). Although these correlations were statistically significant because of the large N , the low correlations indicated that an older age is negligibly associated with reduced dysfunctional beliefs among individuals who are deliberating about their career.

In conclusion, the results of Study 1 show that the DCB is a reliable measure of individuals' dysfunctional career beliefs. The DCB has adequate psychometric properties, and the items are clustered into the five theoretical dimensions. Study 2 further investigated the structure of the DCB using confirmatory factor analysis and tested its concurrent validity.

Study 2: The Structure and Concurrent Validity of the DCB Questionnaire

The goals of Study 2 were (a) to test the structure of the DCB questionnaire using confirmatory factor analysis, (b) to test the concurrent validity of the DCB questionnaire using participants' career decision status as a criterion, and (c) to explore the informativeness of the total DCB score using both the confirmatory factor analysis and the concurrent validity results. These three goals were achieved by analyzing the responses of a second sample of young adults.

The Structure of DCB

We used confirmatory factor analysis to compare three models for the structure of the five scales of the DCB. The first model, labeled 15-1, represents the hypothesis that the 15 items do not comprise five distinct scales but rather form a single construct. In the second model, labeled 15-5, the 15 items are clustered into five scales, without aggregating the five scale scores into a single total score. In the third model, labeled 15-5-1, the 15 items are clustered into five scales and then the five scale scores are aggregated to a single total score. We hypothesized that the fit indices would be higher for the second and third models than for the first model, indicating that the DCB indeed comprises five differentiated categories.

The Concurrent Validity of the DCB Questionnaire

To test the concurrent validity of the DCB questionnaire, we used the *Range of Considered Alternatives (RCA)* question (Gadassi et al., 2012; Gati, Kleiman, Saka, & Zakai, 2003), which assesses career decision status. We hypothesized that higher dysfunctional belief scale scores would be associated with a lower RCA (i.e., a less advanced career decision status).

The Informativeness of the Total DCB Score

The observed heterogeneity of the items in the dysfunctional beliefs scale of the CDDQ and the apparent multidimensionality of DCB raise an important psychometric issue that often arises with multidimensional measures. While the total score for some multidimensional measures, such as the Grade Point Average (*GPA*), the Scholastic Aptitude Test (*SAT*) and American College Test (*ACT*), or the CTI and the CDDQ, is informative over and above the individual scales, the total score for other measures is meaningless or has no significant added value over and above the individual scales. This is the case, for example, in vocational interest inventories like the Self-Directed Search (*SDS*) (Holland, 1997) or personality questionnaires like the NEO Personality Inventory (*NEO-PI*) (Costa & McCrae, 1985). Therefore, Study 2 also investigated whether the total DCB score is informative over and above the five scale scores.

There are two possible hypotheses about the informativeness of the total score. On one hand, the total CDDQ score (Gati et al., 1996) and the total CTI score (Sampson et al., 1998) provide important information over and above the 10 scale scores of the CDDQ and the 3 scales of the CTI. This suggests that the total score of the DCB may have added value, over and above that of the five DCB scale scores. On the other hand, the low internal consistency reliabilities of the dysfunctional beliefs category of the CDDQ, which was observed in many studies (e.g., Gati et al., 2000; Xu & Tracey, 2014), seems to indicate that endorsing a particular dysfunctional career belief might not necessarily be associated with endorsing other such beliefs.

We tested the informativeness of the total DCB facilitating the transition to civilian adult life of soldiers about to be discharged from the army, which was organized by the Israeli Veterans Administration in cooperation with a private foundation. The workshop focused on the participants' rights as veterans, financial self-management, responsibility for making decisions, writing resumes, and preparing for job interviews. Topics involving future studies and career decision-making comprised about 30% of the workshop. The participants filled out the three-part paper-and-pencil questionnaire in the following order: the general background questionnaire, the RCA, and the DCB questionnaire. The time needed for completing the three parts varied from 8 to 12 min.

The questionnaire was filled out by 1,437 participants, but the data of 186 (12.94%) were excluded from the analysis because of missing information in the DCB questionnaire (i.e., skipping items). Of the 1,251 individuals included in the analyses, half ($n = 626$) were women. The mean age

was 21.15 ($SD = 0.66$) years for men and 20.08 ($SD = 0.52$) for women; this difference reflects the fact that men's compulsory military service is a year longer than women's. Almost all the participants (98.3%) had completed 12 years of education, and 858 (68.6%) reported attaining the Israeli high-school matriculation certificate. Almost all the participants (98.5%) indicated that they were thinking about their future occupation or career (i.e., marked 5 or above on the warm-up item), demonstrating that they are a suitable sample for investigating career decision-making beliefs.

Instruments

Background questionnaire. The participants were asked to report their age, gender, place of residence, years of education, and whether they had completed high school and obtained their matriculation certificate. In addition, they were asked to rate how concerned they were about their future career (from 1 = *very little* to 5 = *highly concerned*). A large majority of the participants (70.2%) reported that they were greatly concerned (5), 20.8% reported much concern (4), 6.8% reported moderate concern (3), and only 1.6% and 0.6% reported little (2) or no concern (1), respectively. These responses show that the participants were indeed concerned with their future career, despite having a few weeks left until their discharge from the army.

RCA. The RCA (Saka & Gati, 2007) is a self-report measure that assesses how far individuals have narrowed down the range of careers they are considering, reflecting their decision status and how crystallized their career plans are. The participants were asked to choose the one statement that best described their career decision status: (a) "I do not even have a general direction," (b) "I have only a general direction," (c) "I am deliberating among a small number of specific careers (majors)," (d) "I am considering a specific career (major), but would like to explore other options before I make a decision," (e) "I know what career (major) I am interested in, but I would like to feel confident in my choice," or (f) "I am already sure of the career (major) I will choose." The RCA, which is similar to the Occupational Alternatives Question (OAQ) (Slaney, 1980) but has six options, has been found useful in measuring advancement in career decision-making (Saka & Gati, 2007; Saka, Gati, & Kelly, 2008) and assessing the effects of interventions (Gati et al., 2003).

The DCB questionnaire. As in Study 1, we used the 16-item DCB.

Preliminary analyses. We computed each participant's five DCB scores (the mean of the items in each scale) and total DCB score. We then divided the participants into three groups corresponding to the stages of the prescreening, in-depth exploration, and choice model (Gati & Asher, 2001), according to their response to the RCA question. Participants with a response of (a) or (b) were assigned to the *undecided* group ($n = 587$), as they had either not yet begun the prescreening or were in its initial stages. Participants with a response of (c), (d), and (e), which showed that they were already considering specific alternative(s), and probably also engaged in in-depth exploration, were assigned to the *partially decided* group ($n = 520$), while those whose response was (f) were assigned to the *decided* group ($n = 130$), as that they had already made a decision and thus were not deliberating anymore.

Results and Discussion

Psychometric Properties of the DCB Questionnaire

The middle section of Table 1 presents the means and standard deviations of the five scale scores of the DCB and the total DCB score in Study 2. The reliabilities of the scales were adequate, considering the small number of items per scale: The median Cronbach α of the five scales was .73

Table 3. Fit Indices for the Confirmatory Factor Analysis of the Dysfunctional Career Decision-Making Beliefs Questionnaire.

Model	χ^2	df	χ^2/df	CFI	RMSEA	SRMR	
15-1	2,725.02	90	30.28	.54	.15	.148 to .158	.10
15-5	327.05	80	4.09	.96	.05	.044 to .055	.04
15-5-1	359.00	85	4.22	.95	.05	.045 to .056	.05

Note. $N = 1,251$. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual.

Table 4. Means (and SDs) of the Five Dysfunctional Career Decision-Making Beliefs (DCB) Scales by Career Decision Status Group and the Differences Among the Groups.

Scale	Undecided ($n = 587$)	Partially Decided ($n = 520$)	Decided ($n = 130$)	F(2, 1,234)	η^2
Chance or fate	2.70 (1.57)	2.54 (1.44)	2.21 (1.23)	6.22	.010
Criticality	5.15 (1.85)	5.24 (1.82)	5.06 (1.93)	0.65	—
Significant others	3.74 (1.81)	3.86 (1.88)	3.95 (2.18)	0.99	—
Professional help	4.47 (1.74)	4.41 (1.64)	3.59 (1.76)	14.81	.023
Gender	3.93 (2.22)	3.51 (2.12)	3.19 (2.17)	8.82	.014
Total DCB	4.00 (1.22)	3.91 (1.16)	3.60 (1.20)	5.98	.010

Note. $N = 1,237$. Scales in which there were statistically significant differences ($p < .01$) among the groups are presented in bold.

(.71, .70, .81, .73, and .79, for chance or fate, criticality, significant others, professional help, and gender, respectively), with a Cronbach α of .82 for all 15 items, similar to those observed in Study 1.

Confirmatory Factor Analysis

To test whether the 15-5 and the 15-5-1 models fit the data better than the 15-1 model, we conducted a confirmatory factor analysis ($N = 1,251$). The results, summarized in Table 3, indicated that while the 15-1 model showed poor fit, the two other models, which included the five specific scales, fit the data adequately. Both the 15-5 model and the 15-5-1 model had good fit indices (see Hu & Bentler, 1995, 1999), as hypothesized; the χ^2/df was acceptable for both models (4.09 and 4.22 for the 15-5 and the 15-5-1 models, respectively). The other indices had good fit—the root mean square error of approximation was .05 for both models, the standardized root mean residual was .04 and .05, and the comparative fit index was high—.96 and .95, for the 15-5 and the 15-5-1 models, respectively. In light of the negligible differences among the various fit indices, we concluded (based on Kline, 2005) that the 15-5-1 model fits our data just as well as the 15-5 model. At the same time, however, the 15-5-1 model has a theoretical advantage over the 15-5 model, due to its greater complexity (Kline, 2005).

Concurrent Validity

To test the concurrent validity of the DCB, we analyzed its associations with individuals' career decision status, as measured by the RCA. We tested the hypothesis that a larger number of dysfunctional beliefs would be associated with a less advanced career decision status. We did this by performing a multivariate analysis of variance (MANOVA) with the three groups—undecided ($n = 587$), partially decided ($n = 520$), and decided ($n = 130$)—as the between-subjects factor and the five DCB scale scores as the dependent variables. The results of the MANOVA showed that the

differences among the three groups were statistically significant (Wilks' $\lambda = .85$, $F(10, 2,460) = 20.90$, $p < .001$, $\eta^2 = .08$).

As can be seen in Table 4, the hypothesis that a larger number of dysfunctional career beliefs would be associated with a lower career decision status was confirmed for three scales, as well as the total DCB score. A series of planned contrasts indicated that the decided group's dysfunctional beliefs involving chance and fate, professional help, and gender ($M = 2.21$, 3.59 , and 3.19 , respectively) were lower than those of the other two groups ($M = 2.63$, 4.44 , and 3.73 , $t[178.18] = 3.57$, $t[1,235] = 5.41$, and $t[1,235] = 2.71$, $p < .01$, $d = 0.30$, 0.49 , and 0.25 , respectively). Only for gender was the mean of the dysfunctional beliefs of the undecided group ($M = 3.93$) higher than that of the partially decided group ($M = 3.51$), $t[1,235] = 3.20$, $p < .001$, $d = 0.19$). Moreover, as hypothesized, the mean total DCB score of the *decided* group ($M = 3.60$) was significantly lower than that of the two other groups ($M = 3.96$, $t[1,235] = 3.25$, $p < .01$, $d = 0.30$). These results indicate that there were major differences between the decided group, on one hand, and the partially decided and the undecided groups, on the other, whereas the difference between the latter two groups was small or negligible.

Comparing the Dysfunctional Beliefs in Study 1 and Study 2

The right-hand side of Table 1 presents the results of comparing the dysfunctional beliefs of the participants in Study 1 and Study 2. This comparison shows that the participants in Study 1, who were deliberating young adults actively involved in their career decision-making, reported fewer dysfunctional career beliefs than the participants in Study 2, who were 3½ years younger on average, with most of them not yet actively engaged in career decision-making. This difference was statistically significant for four of the five scales; Cohen's d was smallest (0.17) for the scale of *chance and fate* and largest (0.86) for significant others. The difference was considerable for the total DCB score ($d = 0.50$). These differences provide additional, although indirect, support for the validity of the DCB questionnaire.

General Discussion

The goal of the present research was to develop and test a new multidimensional measure of dysfunctional career decision-making beliefs—the DCB questionnaire. From a theoretical viewpoint, the DCB focuses on assessing beliefs that can affect clients' engagement in career decision-making. Such beliefs often have undesirable consequences—hindering advancement in this process or decreasing the likelihood of making an optimal choice. The DCB is different from other measures of career beliefs, which assess dysfunctional beliefs about a broad range of factors, including the self, the world of work, and general concerns about career decision-making, but do not focus on their potential detrimental effect on the career decision-making process. From a practical perspective, the DCB comprises a manageable number of distinct dysfunctional beliefs—five. Furthermore, unlike some previous measures, each item belongs to one of the scales and the scales' internal consistency reliabilities are adequate, making the DCB more informative and efficient.

The psychometric properties of the DCB were tested on two large groups of Israeli young adults. The results for both samples supported the proposed multidimensional model of DCB. The exploratory factor analysis, cluster analysis, and confirmatory factor analysis all verified that the five DCB Scales are adequately differentiated. Finally, the concurrent validity of the DCB was also confirmed, using the criterion of career decision status. These results support the proposed multidimensional model of dysfunctional beliefs about career decision-making.

The Concept of Dysfunctional Career Decision-Making Beliefs (DCB)

The test of concurrent validity and the comparison of the results for the two samples have important implications for the nature of the dysfunctionality of career beliefs. First, the concurrent validity analysis showed that higher scores were associated with a less advanced career decision status in three of the five categories of dysfunctional beliefs (chance or fate, professional help, and gender), as well as the total DCB score. Interestingly, there was no difference among the three groups in the significant others category. Pilot studies had found that external sources—chance events and significant others—are perceived as different, a fact that is reflected in this study in the rather low correlations between the chance or fate scale and the significant others scale (.35 in Study 1 and .31 in Study 2). Therefore, unlike in the CMS, chance or fate events and beliefs involving other people were not included in the same category.

Perhaps some of the more decided individuals had the status of *identity foreclosure* (Marcia, 1993) and thus conformed to their significant others' expectations without making the decision for themselves. In addition, there was no difference among the three groups in criticality, the scale with the highest scores of the five dysfunctional dimensions among the participants who were about to be discharged from their mandatory military service (Study 2), as well as among the actively deliberating young adults (Study 1). Apparently, the young adults in both groups are aware of the importance of deciding upon their future career but are not fully aware of the possibility of making changes to their career paths in the future; thus, they overestimate the long-term consequences of their present decision. The likelihood of such changes is much greater in the 21st-century world of work than ever before (Pryor & Bright, 2014).

Second, those deliberating young adults who had already begun their career decision-making (Study 1) reported significantly fewer dysfunctional career beliefs in four of the five dimensions than the group of young adults about to be discharged from their mandatory military service (Study 2), a stage when most of them were not yet actively engaged in career decision-making. This finding is of special interest, as deliberating young adults who use self-help tools such as those found in the Future Directions website (www.kivunim.com) tend to have a less advanced decision status (Lipshits-Brazilier et al., 2016, 2017). This suggests that there may be factors in addition to career decision status that can account for the difference in dysfunctional career beliefs between the samples. Such factors may be coping strategies (Lipshits-Brazilier et al., 2016) or the way individuals make career decisions—their CDMP (Gati, Landman, Davidovitch, Asulin-Peretz, & Gadassi, 2010; Gati & Levin, 2012).

Furthermore, as the concurrent validity analysis only refers to some facets of dysfunctionality, the results highlight the importance of exploring the specific associations between the DCB and all three facets of dysfunctionality: beliefs that prevent beginning the process, those that halt it, and those that lead to a less than optimal decision. Future research should test the predictive validity of the DCB with various criteria and in diverse groups.

The Informativeness of the Total DCB Score

Another theoretically interesting issue arising from the present study is the question of part-whole relations in multidimensional measures. In some such measures, the individual scales provide all relevant information, and an aggregate score does not provide any additional insight into the theoretical construct (e.g., personality questionnaires such as the NEO-PI, Costa & McCrae, 1985; vocational interests' inventories such as the SDS, Holland, 1997). In contrast, there are measures in which the total score offers additional information over and above each of the scales separately, as is often the case with scholastic aptitude assessments or achievement scores (e.g., GPA). Between these two prototypical cases are measures, whose part-whole relations are not obvious and require empirical investigation.

There might be a priori theoretical reasons to believe that a total score would be informative. However, there was no obvious hypothesis about part-whole relations for the DCB. While instruments such as the NEO-PI (Costa & McCrae, 1985) are clearly personality measures, and the SAT and the ACT are clearly cognitive measures, dysfunctional beliefs have elements of both. On one hand, beliefs are generally regarded as a cognitive construct (e.g., David, Lynn, & Ellis, 2009). On the other hand, belief patterns, and dysfunctional ones in particular, can also be described in terms of their association with specific personality traits (e.g., the correlation of the Dysfunctional Attitude Scale subscales with neuroticism; Dunkley, Blankstein, & Flett, 1997). The results of the confirmatory factor analysis showed that, in light of the 15-5-1 model's greater complexity, there is no apparent advantage to the 15-5 model. The pattern of associations between the total score of the DCB and the individual's career decision status indicates that the total DCB score does provide relevant information—the participants in the *decided* group had significantly lower DCB scores than those in the partially decided and the undecided groups. However, further research is needed to explore the informativeness of the total DCB score.

Limitations and Future Research

Before the implications of the present research are discussed further, its limitations should be acknowledged. First, although the number of participants in the two studies was fairly large, the samples included participants of different ages, probably with different attitudes toward career decision-making. For example, the sample in Study 1 included people who were actively seeking help in their career decision-making online, while the sample in Study 2 did not. Moreover, it is plausible that dysfunctionality in career decision-making might be manifested differently in other cultures. For example, a recent study found cultural differences in the attribution of events to fate (Norenzayan & Lee, 2010), indicating that beliefs involving chance or fate might differ among cultures (Guan et al., 2015). Therefore, future research should test the proposed model of DCB in other cultures and develop norms for such beliefs in various groups.

Second, although the DCB categories were chosen on the basis of previous theoretical and empirical studies, there may well be additional categories of dysfunctional beliefs. Future research might consider adding a category of *choice perfectionism*: How strongly individuals believe that there is a single career that can perfectly match their preferences and meet all their expectations. Previous research has shown that maladaptive perfectionism is positively correlated with indecision and less satisfaction (Leach & Patall, 2013; Leong & Chervinko, 1996) and that trying to find the “perfect occupation” and pursuing a “perfect” decision-making process are detrimental to decision-making and a possible sign of anxiety (Saka et al., 2008; Serling & Betz, 1990).

Third, because the participants were deliberating young adults (Study 1) or individuals in transition to civilian life (Study 2), who did not receive any compensation for their time, we did not consider it proper to ask them to fill out additional questionnaires about dysfunctional career beliefs. However, future research should compare the DCB and previous dysfunctional belief measures with various criteria in addition to decision status. Moreover, future research should also study the relative severity and the negative effects of the five categories, thus helping to assess the extent of the dysfunctionality associated with each of the five dysfunctional beliefs of the DCB.

Counseling Implications

Dysfunctional beliefs associated with career decisions have repeatedly been found to be among the most salient difficulties that prevent young adults from making a career decision or lead to a

less-than-optimal one (e.g., Gati et al., 1996, 2013; Mau, 2001). Such beliefs may have negative consequences for career decision-making in general and face-to-face career counseling in particular.

Indeed, career counselors include dysfunctional beliefs among the most severe career decision-making difficulties clients face and accord them a high priority in treatment (Gati, Amir, & Landman, 2010). Laypeople, however, have less awareness of their dysfunctional beliefs than of other difficulties involved in career decision-making (Amir & Gati, 2006). Thus, eliciting clients' dysfunctional beliefs, bringing them to their attention, helping them realize that such beliefs are dysfunctional, and then challenging them are essential components of career counseling. The assessment of clients' specific dysfunctional beliefs allows counselors to focus on reframing them.

We propose three steps for counselors dealing with clients' dysfunctional career decision-making beliefs: identification, awareness, and reframing. Starting with the identification stage, the DCB can be administered at the beginning of the first or second session. Alternatively, when the CDDQ is used to assess career indecision, a high score on the dysfunctional beliefs scale of the CDDQ may indicate that it is important to assess the client's *specific* dysfunctional beliefs. The second stage should then focus on bringing the client's most significant dysfunctional beliefs to awareness. For example, when working with a client who has endorsed the statements in the criticality category and thus has a high score on the criticality scale in the DCB, the counselor may initiate a discussion that will bring the issue to the individual's awareness. The third stage is reframing the dysfunctional beliefs. To this end, it may be beneficial, for example, to challenge the criticality belief by discussing the discrepancy between beliefs involving the criticality of the decision and the current state of the world of work, where individuals often make career changes during their life (Pryor & Bright, 2014), and then discuss examples of people who changed their career path successfully. The counselor can demonstrate that decreasing one's belief in the criticality of the decision does not mean that the client should not invest any effort in the process but rather should realize that although it is an important decision, it is not irrevocable or a once-in-a-lifetime choice. Thus, reframing involves altering beliefs from dysfunctional to functional ones. This can be done by using modifications of statements such as those included in the CTI workbook (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996b) or those that appear in the DCB feedback (see www.cddq.org).

The DCB can also be used to test the effectiveness of interventions that aim to decrease dysfunctional beliefs using a pretest–posttest design. This may be especially useful in group interventions aimed at increasing readiness for making a decision, such as career classes intended to help undecided freshmen or sophomores select a major. In such situations, using the DCB makes it possible to evaluate the effectiveness of the intervention in decreasing various dysfunctional beliefs. Another suggestion is that when the questionnaire is administered to clients or to test the effectiveness of an intervention, it should be called beliefs about career decision-making, as the use of the word “dysfunctional” is likely to make individuals wary about answering the questions honestly and might lead them to bias their answers to try to seem more functional.

Conclusion

The DCB provides a means for systematically assessing individuals' dysfunctional career decision-making beliefs in terms of five evidence-based categories and thus can provide key information for career counselors about their clients' beliefs. The DCB joins other multidimensional measures of career decision-making, such as those assessing CDDQ (Gati et al., 1996), the strategies used to cope with those difficulties (Lipshits-Braziler et al., 2016), CDSE (Taylor & Betz, 1983), and CDMP (Gati, Landman, et al., 2010), which allow career counselors and researchers to find out how individuals approach and advance in their career decision-making process.

Appendix A

The items in the DCB questionnaire (Items 6, 11, and 16, representing dysfunctional beliefs involving gender, have different versions for women and men).

1. Choosing a career that suits my preferences is important, as it will determine whether I am satisfied with it (warm-up item).
2. It is not worthwhile to invest time and effort into choosing a career, as everything in life is a matter of luck anyway.
3. I believe that choosing a career is a onetime lifelong commitment.
4. Meaningful people in my life (such as family and friends) know me better than I know myself, and so will know what career is best for me.
5. A career counselor would know exactly what career would suit me best.
6. I cannot work in a profession that requires skills that I do not seem to have because they are considered “feminine” (i.e., therapeutic skills). (m)
I cannot work in a profession that requires skills that I do not seem to have because they are considered “masculine” (i.e., technical skills). (f)
7. It does not really matter what career I choose, as ultimately fate will determine my future career.
8. Choosing a career is a crucial decision, so I must not make a mistake.
9. My parents know which career I should choose better than I do.
10. Psychological tests (such as skill or preference tests) can predict how successful I will be at my chosen career.
11. There are some careers that I will not pursue because they seem too “feminine,” even though I find them interesting (i.e., child caretaker, nurse, or social worker). (m)
There are some careers that I will not pursue because they seem too “masculine,” even though I find them interesting (i.e., electrical engineer, bus driver, or mechanical engineer). (f)
12. It is unnecessary to invest a lot of effort into choosing a career, as opportunities will appear sooner or later in any case.
13. I must invest effort in the process of choosing a career, as the decision will affect the rest of my life.
14. Important people in my life (such as family and friends) know what career I should choose.
15. A career counselor will make the best decision for me.
16. In fact, there are only certain career options that I would consider—I cannot work at jobs considered “feminine.” (m)
In fact, there are only certain career options that I would consider—I cannot work at jobs considered “masculine.” (f).

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