

## CAREER DECISION-MAKING DIFFICULTIES AND DECISION STATUSES AMONG GREEK STUDENT TEACHERS

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**Abstract:** This study examined the perceived career decision-making difficulties among Greek student teachers via the Career Decision-Making Difficulties Questionnaire (CDDQ). The Greek version of CDDQ was firstly analyzed with exploratory and confirmatory factor analysis. In a sample of student teachers majoring in humanities and social sciences ( $N = 780$ ), the initially proposed structure of CDDQ was partially confirmed with seven of the ten anticipated factors present. These factors were used as independent variables in multivariate models predicting participants' overall difficulty during the career decision-making process, the degree of certainty for their choices, and their decision status. Discussion of the findings is provided.

**Key words:** Career decision making, Certainty, Decision status, Difficulty in decision making

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**Acknowledgements:** The authors are thankful to Georgia A. Koumoundourou, who offered the official Greek translation of the CDDQ scale. Julie Vaiopoulou wishes to express her gratitude to the Alexander S. Onassis Public Benefit Foundation for awarding scholarship and providing fund for the present research.

## INTRODUCTION

Career decision-making is a challenging process for many people since it requires information processing about both the self and the world of work (Jepsen, 1984). Considering that choosing a career path is a crucial issue with lifelong effects, as it may lead to totally different lifestyles, it is not surprising that the majority of career decision-makers experience confusion and anxiety due to the endless possible career options (Gati, 1986; Gati & Levin, 2014; Osipow, 1999). These feelings could cause career indecision, especially in cases where the available information is neither enough nor reliable or when the decision-making skills possessed by the individual are poor. Indecision becomes a problematic state when the decision-maker's psychological characteristics interfere with decision-making tasks or if the requirements of vocational maturity and developed vocational identity are not met (Crites, 1969; Gati, 1986; Petitpas, 1978).

Young people's career indecision can result in avoiding or postponing decisions or even making a wrong one. It is important to note that, apart from choosing an unsuitable lifestyle, a suboptimal career decision has long-term negative consequences on a persons' vocational and social life, affecting even their well-being, since time, money and effort are required to be invested in order to restore it (Mann, Harmoni, & Power, 1989). As a consequence, many individuals realize that they need help on this process and seek for professional advice. It is, however, crucial, for the career counseling procedure to be effective, that the counselors are aware about the nature and the origin of the preventing decision-making difficulties in order to provide the appropriate support (Gati, Krausz, & Osipow, 1996).

All the above justify the extended research to provide a better understanding of the career decision-making processes and the individual or environmental factors influencing them (e.g., Larson, Busby, Wilson, Medora, & Allgood, 1994; Lehmann & Konstam, 2011; Levinson, Ohier, Caswell, & Kiewra, 1998). Research in this field has primarily focused on developing means of measuring such factors in order to examine how they are correlated to career indecision. Thus, instruments especially designed for measuring career decision-making difficulties are available and a lot of work has been done on their validity and reliability. Among them is the *Career Decision Scale - CDS* (Osipow, Carney, & Barak, 1976), a widely used instrument. CDS was developed to serve as a diagnostic tool of career indecision and was the result of its authors' clinical experience, thus lacking theoretical background (Kelly & Lee, 2002; Osipow, 1999). *My Vocational Situation* (Holland, Daiger, & Power, 1980) was designed in order to help career counselors to diagnose their counselees' vocational decision-making barriers. It comprises three factors, and similarly to the

CDS, it was developed to assist career counselors resulting to limited theoretical foundation (Osipow, 1999; Reardon & Lenz, 1999). Finally, the *Career Factors Inventory* (Chartrand, Robbins, Morrill, & Boggs, 1990) is a second-generation, rationally designed, instrument. Its factorial structure is relatively stable and it is intended to serve as a diagnostic tool during the counseling interventions; thus, it is characterized by absence of a clear theoretical base (Kelly & Lee, 2002; Osipow, 1999).

As shown above, the relevant empirical research has been repeatedly criticized for lacking theoretical foundation (Tinsley, 1992). In an attempt to reply to these criticisms, Gati et al. (1996), based on decision theory (e.g., Brown, 1990; Jepsen & Dilley, 1974; Katz, 1966; Mitchell & Krumboltz, 1984; Phillips, 1994), created and developed a taxonomy of the difficulties faced by persons during their career decision-making process. Decision theory posits that there are three generic attributes involved in the decision-making process, that is, the decision to be made, the number of alternatives, and the number of aspects in each alternative which can be compared and evaluated. In addition, some more specific assumptions are made, as decision theorists accept that there is a plethora of available alternatives, that information about each alternative is available and each of them can be described only by considering several aspects and, finally, that there is uncertainty about the characteristics of both the career alternatives and the decision-maker itself (e.g., Gati, Osipow, & Givon, 1995; Gelatt, 1989; Lofquist & Dawis, 1978).

#### *Career Decision-making Difficulties Questionnaire (CDDQ)*

In this theoretical framework, Gati et al. (1996) proposed a hierarchical taxonomy, where the distinction between difficulties experienced prior to and during the decision-making process is put at the top level. This taxonomy relies on the theoretical construct of the *ideal career decision maker* (i.e., an individual who understands the need to decide, is eager to make such a decision and capable of making the “right” one). Taking into consideration the complex nature of career decision-making procedure, it is assumed that most people are far from the profile of the ideal career decision maker, the so-called *homo economicus*; hence, any deviation from an ideal decision is a potential problem, which may affect the process. Based on this postulation, the researchers classified the potential difficulties into ten discrete, but not independent, categories (i.e., types of problems) which are further categorized into broader groups. For the empirical examination of the proposed taxonomy, they constructed a third-generation instrument, the *Career Decision-making Difficulties*

*Questionnaire* (CDDQ) (Gati et al., 1996).

According to the original taxonomy by Gati et al. (1996), the CDDQ items represent ten distinct types of problems or difficulties that are subsumed under three major categories of career decision-making difficulties<sup>1</sup>. The first category, *Lack of Readiness*, includes three subcategories of difficulties: (1) lack of Motivation (RM), (2) general Indecisiveness (RI), and (3) Dysfunctional beliefs (RD). The second category, *Lack of Information*, includes four subcategories: (4) lack of knowledge about the steps involved in the Process of career decision making (LP), (5) lack of information about the Self (LS), (6) lack of information about the various Occupations (LO) and (7) lack of information about the ways of obtaining Additional information (LA). The third major category is *Inconsistent Information* and includes three subcategories: (8) *Inconsistent Information* (IU), (9) Internal conflicts (II) and (10) External conflicts (IE). Participants respond to a 9-point scale where 1- indicates low difficulties and 9- indicates high difficulties.

The CDDQ has been criticized that, while it measures multiple cognitive factors, it totally ignores affective aspects (e.g., anxiety), which at certain levels might influence both attitudes and information processing and thus can affect the decision-making process (Creed & Yin, 2006; Tien, 2005; Vahedi, Farrokhi, Mahdavi, & Moradi, 2012). However, the main advantages of CDDQ lie in its solid theoretical base and its capacity to provide both the assessment of decision-making difficulties and the corresponding evaluation of relevant aspects of individuals' career preferences. From this point of view, CDDQ has, apart from theoretical, also practical implications, as it can explicitly provide counselors with useful data to plan their counseling interventions (Amir, Gati, & Kleiman, 2008; Gati & Levin, 2014).

The structural validity of CDDQ has been reported in studies with American, Israeli (e.g., Gati & Saka, 2001b; Hijazi, Tatar, & Gati, 2004) and Turkish (Bacanli, 2016) populations. In these studies, using the ADDTREE classification method, the theoretically anticipated structure, with some dislocations of the scales between the major categories, was identified. Other reports resulted in deviations from the initial structure. A CFA analysis conducted by Mau (2001) indicated lack of model fit for the Taiwanese samples, while the model fit was adequate as far as concerning the American sample. In Creed and Yin's (2006) study using exploratory factor analysis, where items were allowed to load freely to the major categories during EFA, no

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<sup>1</sup> Note that the following abbreviations of the scales are the official ones, provided by Gati et al. (1996), resulting by the combination of the category (i.e., the first letter) and the subcategory initials (i.e., the second letter). For example, the category Lack of Readiness (R) includes the subcategory "Lack of Motivation" (M) resulting in the abbreviation RM.

Readiness category emerged. Another research was conducted to assess the factorial structure of the CDDQ in Iranian population (Vahedi et al., 2012). Nine items were excluded from the confirmatory procedure due to low factor loadings. The remaining items were allocated to three major latent categories, namely, lack of information, lack of information about the self and inconsistent information, and lack of readiness (including only four out of the 11 original items). In all these reports, the deviations from the theoretically expected structure were attributed to cultural differences. Cultural differences have been also reported in several other studies (e.g., Albion & Fogarty, 2002; Mau, 2004; Zhou & Santos, 2007), but there is no published evidence on CDDQ's factorial structure in European populations. Indeed, in the past the CDDQ was only used to serve as predictor or covariate for psychological constructs, such as emotional intelligence and personality traits (e.g., Di Fabio & Palazzeschi, 2009; Di Fabio & Saklofske, 2014).

The factor structure and the psychometric properties of the Greek version of CDDQ (G-CDDQ) have not been extensively reported in the international literature. Reference to the factorial validity of the G-CDDQ has been made for a sample of high school students (Koumoundourou & Kassotakis, 2007). In this study, the CFA resulted in an adequate fit of the proposed three-factor structure to the data. Detailed methodological and statistical analysis about the ten first-order types of difficulties were not provided. The G-CDDQ has been used for measuring career decision-making difficulties and testing various hypotheses by implementing the initially proposed factors. These studies focused on understanding the parental influence on career decision making in high school student populations (Koumoundourou, Tsaousis, & Kounenou, 2011) and implementing the *Generalized Self-Efficacy Scale* along with the *Career Thoughts Inventory*, which served as covariates to the CDDQ scale in university students (the factorial validity of which was considered as assumed for this population; Sidiropoulou-Dimakakou, Mylonas, Argyropoulou, & Tampouri, 2012). Therefore, there is lack of studies confirming the factorial structure of the G-CDDQ in Greek university students.

It is relevant to emphasize that the dimensions of a psychometric instrument are latent variables proposed by the researcher and are elements of a certain theory which is explicitly tested. Measurement models are blueprints for scientific theories (Borsboom, 2005). Thus, these latent constructs do not necessarily exist in individuals' mind and might be changed or differentiated across groups. The structural validity of an instrument is not a universal property and it is expected to be sensitive not only to cultural differences and but also to the variation among diverse groups of participants belonging to the same culture but possessing a different state of mind.

Besides the 32 items comprising the CDDQ, three more items were used. In the first one, participants responded whether they had already considered what occupation they would like to choose (possible answers 'Yes/ No'). The second one used to measure the *Degree of certainty* about the decision making, asking "If so, to what extent are you confident of your choice?" with 1 indicating low certainty and 9 high certainty. After answering the main questions of the CDDQ, the participants were asked to rate their *Overall difficulty* ('Finally, how would you rate the degree of your difficulty in making a career decision?'), on a 9-point Likert scale, where 1 indicates low difficulty and 9 high difficulty (Gati & Saka, 2001b).

### *Decision status*

An interesting theoretical construct used in the literature is that of the participants' *decision status* (Tien, 2005). Initially, this construct was proposed by Marcia (1966) as a four-level classification of adolescent identity status: achievement, foreclosure, moratorium and diffusion. Tien (2005) fostered the idea of theoretical differences between indecision (a developmental stage through which a person may pass when found in a decision-making situation) and indecisiveness (a personality trait generalized across different decision-making situations) (Herr & Cramer, 1996; Osipow, 1999) and divided the Marcia's moratorium group into two different subgroups: the *anxious* type (related to indecisiveness) and the *explorative* type (related to indecision) of undecided subjects. In order to study their decision status, Tien (2005) asked the participants to choose among five mutually exclusive statements the one that described them best. She found a statistically significant association between decision status and all CDDQ factors, except for Dysfunctional Myths (RD).

### ***The present study and research hypotheses***

The present research contributes to the related literature by investigating the career decision-making difficulties perceived by a sample consisting of student teachers. Specifically, the current economic situation in Greece makes student teachers an especially interesting group for the career decision-making difficulties research. This is because, traditionally, most student teachers were employed by the Greek Public Education in primary as well as secondary schools. However, the economic crisis led the Ministry of Education to dramatically reduce the number of appointments. Given the oversupply of graduates during the last decades, there is a downturn of teacher jobs, which forces the prospective educators to seek other career alternatives including migration.

The present study focused on the career decision-making difficulties of student teachers. The selection of the CDDQ instrument was based on its sound theoretical foundation, the philosophy of which is attuned with the basic view of the present endeavor. Given the lack of research on the psychometric properties of the G-CDDQ for this specific subpopulation, which may obscure the difficulties faced by student teachers, a second goal of the present study was to investigate the factor structure of the G-CDDQ. Additional hypotheses were tested concerning (i) the overall difficulty and the certainty of the decision process, and (ii) the decision status of the participants.

Based on the above and the related literature, the following four hypotheses were tested:

1. There are ten first-order factors in the G-CDDQ. The ten factors as specified in the original CDDQ are: RI, RM, RD, LP, LO, LS, LA, IU, II, and IE. The three major categories proposed by the CDDQ designers as broader dimensions (Gati et al., 1996), namely, Lack of Readiness, Lack of Information and Inconsistent Information, are hypothesized to form second-order factors.
2. The extracted and validated factors of G-CDDQ are associated with the overall difficulty of the decision-making process as perceived by the participants.
3. The extracted and validated factors of G-CDDQ are associated with students' degree of certainty about the career choice.
4. The extracted and validated factors of G-CDDQ are associated with the subjects' decision status.

## METHOD

### *Participants*

Convenience sampling was followed. Participants were 780 student teachers majoring in Humanities (78.1% female) in two universities in Northern Greece. Specifically, they studied in the following Departments: Philosophy and Education (16.4%), Educational and Social Policy (14.3%), Philology (14.3%), Theology (13.8%), Primary Education (13%), Pastoral and Social Theology (12.7%), Pre-school Education (9.3%), and History and Archaeology (6.1%). Among them 11.6% were freshmen, 18.5% were sophomores, 19.4% were juniors, 33.4% were seniors and 16.3% were students exceeding the anticipated four-year study period. Their age ranged from 18 to 50 years with a mean of 21.5 ( $SD = 3.50$ ) and median of 21.

## **Measures**

### *The Career Decision-making Difficulties Questionnaire*

The Greek version of the Career Decision-Making Difficulties Questionnaire (G-CDDQ) was used. This version has been translated by Koumoundourou and Kassotakis (2007) based on the 32-item version of Gati and Saka (2001b). Participants respond to a 9-point Likert scale where 1 indicates low difficulties and 9 indicates high difficulties. Examples of the items comprising each assumed factor are presented in Table 1.

### *Decision status*

In addition to the 32 items of the G-CDDQ, the participants were asked to choose among five alternatives to indicate their *decision status*. Tien (2005) proposed five categories for five different career identity developmental statuses. This construct was adopted in the present study. The following five mutually exclusive statements: (1) *Identity diffusion*: “I am not sure about what to do in the future and I am not worried about it. Everything will be fine”; (2) *Anxious type of indecision*: “I am worried about making decisions for my future. Even if I got enough information, it’s still hard for me to make a decision”; (3) *Explorative type of indecision*: “I am not sure about my future. If I can gather more information about myself and the world of work, it will be easier for me to make a decision”; (4) *Foreclosure*: “I know what to do as to my career in the future and I have never worried about it”; and (5) *Identity achievement*: “I was worried about my future and did a lot of exploration. Now I am clear and have decided about what to do as my career”. For the translation validity of the above statements, the guidelines for translation of instruments in cross-cultural research were followed (Hambleton, Merenda, & Spielberger, 2005). The decision status was scored on a 5-level ordinal scale, where 1 indicated Identity diffusion, 2 indicated Anxious type of indecision, 3 indicated Explorative type of indecision, 4 indicated Foreclosure and 5 indicated Identity achievement.

### *Overall degree of difficulty and Degree of certainty*

Two additional items, which were measured with a 9-point Likert scale, were included in the present questionnaire as in the original CDDQ (Gati & Saka, 2001b). These were the *Degree of certainty* for their career choices (“If so, to what extent are you confident of your choice?”), with 1 indicating low certainty and 9 high certainty, and the *Overall degree of difficulty* (“Finally, how would you rate the degree of your



difficulty in making a career decision?") they face in making their choice, where 1 indicates low difficulty and 9 high difficulty.

### ***Procedure***

Participants filled in the questionnaire and the rest of items in their classes after permission by their instructor. The time to complete the whole questionnaire was on average 30 minutes. Participation was voluntary, and participants were informed that they could stop whenever they felt they wanted to. The data collection was carried during spring semester 2014.

## **RESULTS**

The sample was randomly divided into two equal parts; one was used for the exploratory factor analysis and the other for the confirmatory. From the second group a random subsample of 250 cases was used, as sample size determination requires (Hatcher, 1994) for confirmatory factor analysis. For the additional analyses the whole sample was used. The missing data were handled by listwise deletion, since the available sample was adequately large.

### ***Assessing G-CDDQ's structural validity***

#### *Exploratory Factor Analysis (EFA)*

The original proposed structure of CDDQ (Gati & Saka, 2001b) with ten distinct factors representing types of problems (RM, RI, RD, LS, LP, LO, LA, II, IU, and IE) was not supported by confirmatory factor analysis (CFA) in the present sample. For this reason, exploratory factor analysis was used to reveal the dimensionality and the underlying factor structure. In Exploratory Factor Analysis (EFA), assumptions are made concerning the underlying factors and the proportion of variance in the items explained by the extracted factors. Principal Components analysis (PCA), for example, does not separate out errors of measurement from shared variance, and this may result in inflation of incorrect common factors. Principal Axis Factoring overcomes this disadvantage and provides a better estimate of the correlations (Mulaik, 1972). A critical assumption is also that the subscales of interest are orthogonal (uncorrelated). The use of Oblimin Rotation presumes that the factors are correlated which is more realistic for social and behavioral sciences.

An EFA was conducted, using Principal Axis Factoring (PAF) and oblimin rotation on the initial pool of 32 items. Results of the scree plot, eigenvalues, item factor loadings and the overall factor interpretability were used to determine the factor solution.

Items with factor loading  $< .40$  were dropped with an exemption of the item 03, which was kept as reasonably supporting factor interpretation. The Kaiser-Guttman criterion of eigenvalue greater than 1 was taken into account to decide on the number of factors extracted. Seven factors were extracted. The KMO index was 0.90 and the Bartlett's test of sphericity  $p < .0001$ . Note that an auxiliary analysis of PCA and varimax rotation suggested also a seven-factor structure.

The seven factors explained 67.2% of the variance and had eigenvalues 7.820, 2.279, 1.764, 1.489, 1.216, 1.186 and 1.039 respectively, while the corresponding cumulative variance explained is 31.279, 40.394, 47.451, 53.407, 58.270, 63.013 and 67.171, respectively. Table 1 shows the PAF results.

The new structure included only 25 items. Three (II, IU and LA) of the ten anticipated factors, based on the original Gati et al.'s (1996) model, were no longer present in the new structure, while some item misplacement was observed. Specifically, the new factors with the corresponding items were: RM (03, 04, 05), RI (06, 07, 08), RD (10, 11, 12, 13), LS (18, 19, 20, 21, 27-Iu), LP (15, 16, 17); LO (23, 23 24, 26-La, 29-Iu), and IE (35, 36). Items 27 and 29, which in the original structure belonged to the IU factor, loaded the LS and LO factors respectively, while Item 26, which initially belonged to LA, loaded the LO factor. It was decided that these items should be kept in the new resulting structure, because of their interpretability (see Discussion section). The 7-factor structure was subsequently confirmed by CFA.

Attempts to reduce the 25 validated items to a smaller dimensional structure, by probing a two- (according to the *Prior* and *During the procedure* categorization) and a three-factor structure (according to the *Lack of Readiness*, *Lack of Information*, *Unreliable information* categorization), failed. These results are not consistent with those reported in the majority of the relevant literature (e.g., Creed & Yin, 2006; Mau, 2001; Tien, 2005; Vahedi et al., 2012).

#### *Confirmatory Factor Analysis (CFA) for the proposed model*

The proposed 7-factor structure fitted in a CFA model adequately ( $\chi^2/df = 1.18$ , CFI = .99, RMSEA = .032, 90% CI of RMSEA = [.028; .052], SRMR = .032, GFI = .97; AGFI = .94; NFI = .95 and NNFI = .99) (Byrne, 1994; Hu & Bentler, 1999).

Next, scores for the seven factors (RM, RI, RD, LS, LP, LO and IE) were



obtained by averaging the scores of the corresponding items. Then, a two- and a three-factor model were tested by CFA using the resulting scores as observable variables and the three anticipated major categories as the latent variables. A two-factor structure (Lack of Readiness and Lack of Information) only converged and resulted to an adequate model fit ( $\chi^2/df = 1.58$ , CFI = .98, RMSEA = .06, 90% CI of RMSEA = [.037; .10], SRMR = .056, GFI = .96, AGFI = .96, NFI = .94, NNFI = .96).

CFA leads to the conclusion that for the G-CDDQ the first-order factor structure (with the seven factors) was confirmed, along with the second-order factor structure which includes the *Lack of Readiness* and the *Lack of Information* dimensions, while the dimension *Inconsistent Information*, merely represented by the *External Conflicts* type of problem, was not present (see Discussion section). Figure 1 shows the validated part of the Greek version of the CDDQ compared to the original (Gati et al., 1996; Gati & Saka, 2001b).

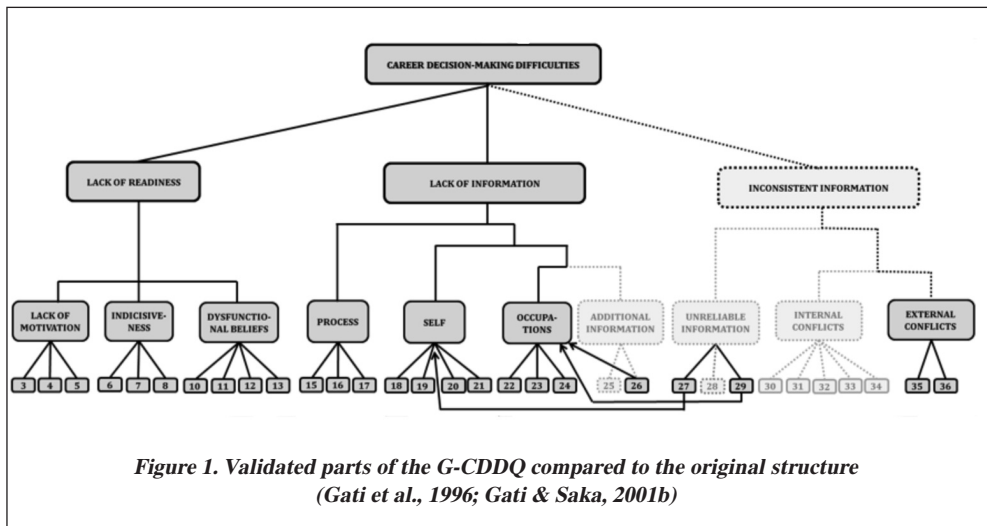


Table 2 shows the correlation matrix of the seven factors, means, standard deviations and the corresponding reliability coefficients. Cronbach’s alphas ranged from .59 to .86 and are comparable to those reported in the relevant literature.

These seven factors were subsequently used as predictors in the following statistical analyses.

**Table 2. Correlation matrix of the seven factors representing different types of career decision-making problems. Cronbach's  $\alpha$  and number of items**

	RM	RI	RD	LS	LP	LO	IE	$\alpha$	Items
<b>RM</b>	1.00							.59	3
<b>RI</b>	.217**	1.00						.74	3
<b>RD</b>	.005	.091*	1.00					.69	4
<b>LS</b>	.446**	.400**	-.093**	1.00				.86	5
<b>LP</b>	.404**	.504**	.059	.592**	1.00			.85	3
<b>LO</b>	.306**	.370**	-.049	.568**	.586**	1.00		.86	5
<b>IE</b>	.308**	.294**	.077*	.404**	.354**	.329**	1.00	.76	2
<b>G-CDDQ Total</b>								.88	25
<b>Mean</b>	2.74	4.53	4.08	3.91	3.06	4.34	2.42		
<b>SD</b>	1.51	1.94	1.68	1.85	1.71	1.78	1.80		

Note: \*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

RM = lack of readiness, RI = general indecisiveness, RD = dysfunctional beliefs, LS = lack of knowledge about self, LP = lack of knowledge about process, LO = lack of knowledge about occupations, IE = external conflicts

### **Association of the types of problems to overall difficulty, degree of certainty and decision status**

Multiple Regression Analysis (MRA) was conducted to test the association of the overall difficulty ( $M = 4.84$ ,  $SD = 2.36$ ) with the seven types of decision-making difficulties. The Enter method was used. The final regression model,  $R^2 = .35$ ,  $F(6, 554) = 58.9$ ,  $p < .001$ , explained 35% of the variance in the dependent variable. It included as predictors the variables RD, LP, LO and LS. While LP, LO and LS had positive coefficients, RD had a negative coefficient, that is, dysfunctional beliefs might in fact contribute to amelioration of the subjective/perceived career decision-making overall difficulty, while the rest of the factors contributed to their reinforcement. MRA was also conducted for the degree of certainty ( $M = 6.93$ ,  $SD = 1.76$ ). MRA resulted in a model that included as predictors LS, RD, IE, LP and RM and explained 33% of the variance,  $R^2 = .33$ ,  $F(6, 554) = 69.2$ ,  $p < .001$ . LS, IE, LP and RM had negative coefficients. It is noteworthy that RD had a positive coefficient, which means that dysfunctional beliefs, unlike the other types of decision-making difficulties, contributed to the enhancement of the certainty that an individual feel about their career choice.

In addition, the effect of the above seven decision-making difficulties on the decision status, an ordinal variable, was examined by implementing Ordered Logistic Regression (OLR). The participants were allocated among the five levels of decision statuses as follows: identity diffusion (12.8%), anxious type of indecision (19.8%), explorative type of indecision (34.0%), foreclosure (10.2%), and identity achievement (23.3%). OLR models the logarithm of the ratio of probability (called odds) of levels,

under or equal to a given cut to the probability of those over the cut (Hilbe, 2009). The results show that RM, RI and LS had negative effects ( $p < .001$ ), that is, the lower values in RM, RI and LS the larger the odds of being at a higher level of decision status, which is the expected pattern. Interestingly, the opposite holds for RD, which is a noteworthy finding and is discussed later.

## DISCUSSION

The present study aimed to investigate the psychometric properties, that is, the factorial validity and internal consistency, of G-CDDQ. Also, whether the validated factors of G-CDDQ are statistically associated with the degree of certainty, the overall difficulty during the decision-making process and the participants' decision status. In the present study, the EFA and CFA indicated that only 25 items from the initial 32-item questionnaire are valid for the Greek student teacher population. This was the first attempt to evaluate CDDQ's construct validity in a European population via advanced statistical procedures.

The items eliminated from the initial structure belonged to the *Internal Conflicts* (II), *Unreliable Information* (IU) and *Additional Information* (LA) dimensions. It is worth noting that during the exploratory process the II-items were grouped together with the IE-items. A possible interpretation of this finding is that Greek students perceived both internal and external conflicts as one category and did not distinguish them. The II items, however, were eliminated from the 7-factor structure due to the low factor loadings. The items which initially belonged to IU factor were grouped to different factors. Item 27 was grouped with LS-items, and this is a reasonable replacement considering that it refers to personal preferences. The items 26 and 29 were grouped to the LO category; this is a reasonable finding as they both refer directly to the occupation.

A question arises about the invalidity of the items 25, 28, 30, 31, 32, 33 and 34, which were removed from the new proposed factor model. Specifically, Item 25 ("I find it difficult to make a career decision because I do not know how to obtain additional information about myself") and Item 28 ("I find it difficult to make a career decision because I have contradictory data about my abilities and/or personality traits") proved rather incomprehensible by the participants. A *post hoc* explanation could be given considering the general remark that Greek students rarely question their abilities to decide for a professional career; in Greece it is commonly assumed that choosing a field of studies or a career is basically a matter of preferences or academic achievement rather than of capability to perform a specific job. This finding supports those reported earlier in the literature (e.g., Albion & Fogarty, 2002; Creed

& Yin, 2006; Mau, 2001, 2004; Zhou & Santos, 2007), that cultural differences affect CDDQ's factorial structure.

Even though a lot of the original items were removed from the G-CDDQ, the amended seven factors validated from the CFA, have shown good reliability values, which are acceptable compared to those reported in the relevant literature (Bacanli, 2016; Gati et al., 1996; Gati & Saka, 2001a, 2001b; Hijazi et al., 2004; Kelly & Lee, 2002; Lancaster, Rudolph, Perkins, & Patten, 1999; Mau, 2001; Tien, 2005). This suggests that the 25-item G-CDDQ possesses a valid seven-dimensional structure, thus it can be implemented to Greek student teacher population to measure their career decision-making difficulties. Moreover, the final factorial structure supports further the multidimensional traits of indecision, making the G-CDDQ a useful tool for career counsellors to diagnose difficulties faced by counselees.

***Types of difficulties associated with the overall difficulty, the degree of certainty, and decision status***

Regardless of those aspects of the theoretical model proposed by Gati and his colleagues (1996) that were not supported in the present study, the G-CDDQ does provide valuable information about the population in question, as it was shown that the validated categories of difficulties contained in the G-CDDQ were significant determinants of the overall difficulty, the degree of certainty, and decision status of young people.

The regression analyses suggest that the most important dimension influencing participants' overall difficulty and certainty while making a career decision is the *Lack of Information*. From the seven validated types of problems all three belonging to this dimension were identified as positively related to the overall difficulty. Analogously, two of them, *Lack of Information about Self* (LS) and *Lack of Knowledge about the steps involved in the process of career decision-making* (LP), along with *Lack of Motivation* (RM) and *External Conflicts* (IE) were found to reduce the degree of certainty about the chosen career.

In so far as the individuals' decision status is concerned, the lower the levels of *Lack of Motivation* (RM), *General Indecisiveness* (RI), and *Lack of Information about Self* (LS) types of problems the higher the probability that a participant had achieved a higher level of decision status.

It can be concluded, then, that the dimensions of G-CCDQ predicted with an interpretable manner the three dependent variables: decision status, degree of certainty and overall difficulty in the decision-making process. These consistent associations add to the reliability issues in the present inquiry and further support the cogency of the G-CDDQ implementation in this field.

In all analyses, the dysfunctional career beliefs, demonstrated a noteworthy behavior; that is, contrary to the theoretical expectations, they were found to ameliorate the overall difficulty, enhance the degree of certainty for the career choice, and increase the odds of obtaining a higher level of decision status. A possible interpretation could be that some kinds of beliefs or even ‘myths’ could function in a catalytic way. For instance, a person who marks a high score in items such as: “I believe that a career choice is a one-time choice and a life-long commitment”, will probably be more focused and conscious in pursuing his choice, so that he/she finds “what he/she really wants” with more self-awareness and less anxiety. Of course, this explanation is not a universal interpretation. The role of dysfunctional beliefs is rather a complex phenomenon, where other individual differences and cultural issues as well might interfere, as it has been reported elsewhere (e.g., Mau, 2001). Moreover, it has been shown that dysfunctional beliefs can affect the dynamics of decision-making processes in a peculiar way, introducing ambiguity and uncertainty in the outcomes particularly under bounded rationality (Stamovlasis & Vaiopoulou, 2017). Based on the above, it seems that the dysfunctional career beliefs need special attention and probably additional exploration of their functioning and impact.

### ***Limitations***

The present research has limitations that originate from the specific sample used and the methodological choices. The conclusions are limited to tertiary education and specifically to the Humanities students, while generalization is further limited by the fact that the students were from merely two universities. Furthermore, they all were students who had already chosen their major, thus they were at a later stage in the career decision process. The results related to career decision-making problems are constrained by the choice of the specific instrument. Other factors (e.g., of emotional origin) that might affect decision-making difficulties and achieved decision statuses, were not examined here. Lastly, a deeper understanding about how participants feel, think and act in a career decision-making process was not investigated because it was beyond the scope of the present study; however, given its importance, further exploratory research with complementary qualitative approaches (e.g., triangulation) might be a suggested future endeavor.

### ***Implications***

#### *Implications for career counseling*

The findings of the present research are important for guidance and counseling practitioners and can be utilized in designing career counseling programs for



tertiary education. As it was shown in the research, the modified version of the CDDQ is valid and, thus, it can serve as a tool for measuring career decision-making difficulties in Greek student population. Given that students report higher difficulties due to general indecisiveness, dysfunctional career beliefs and lack of knowledge about occupations, it is suggested that counselors focus their attention during the sessions on these factors. Workshops in career decision-making process offered to students by the university career offices could be very useful in this direction.

Furthermore, the results of the present study might be very useful for career guidance courses in secondary schools as well as in the Guidance and Counseling Centers in Greece. The identified decision-making difficulties of the students might well have some roots in the deficits of the school guidance courses, which are primarily focused in the development of self-awareness and neglect other skills relating to decision-making. Incorporating in guidance syllabus more issues about looking for, critically assessing and utilizing career-related information would also strengthen the decision-making skills of the students. An eventual adaptation of the CDDQ for secondary school students would also be of great importance as its use could be proactive for the students to identify and work with their decision-making difficulties before the transition to tertiary education.

#### *Implications for research*

Our research showed that G-CDDQ is an appropriate tool for evaluating *Lack of Readiness* and *Lack of Information* related to career decision-making and thus it could be implemented to the Greek population. However, further research is needed to complete the questionnaire with the lost part, that is, to re-design the non-fitting items and/or improve it with other dimensions (e.g., anxiety or other affective factors as suggested in previous works; Kelly & Lee, 2002). Moreover, new studies need to be conducted to elucidate the role of the unique cultural characteristics of European youths during the career decision-making. Finally, another important issue for further research is the role of dysfunctional thoughts in the career decision-making process as discussed earlier. Dysfunctional beliefs seem to have a very determinant role in certain cultures and the test of this hypothesis might open a new area of investigation.

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