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Ph.D. THESIS SUMMARY

CAREER DECISION-MAKING DIFFICULTIES AND EMOTIONAL DISTRESS:

ASSESSMENT AND INTERVENTION

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Note.

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  a. The thesis includes original research activities conducted by KRIZSÁN (căs. KULCSÁR) VIKTÓRIA (author) with the goal to receive the doctor title;

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(2) All the tables and figures are numbered in the corresponding chapters of the thesis.

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Keywords: career decision-making difficulties, emotional distress, rational-emotive behavior therapy, worry, adolescents

CHAPTER I. THEORETICAL BACKGROUND

Career decision-making difficulties became a more frequent problem for the younger generation than it has been ever before. The fast changes in technology, economy and society result in an increase in job and education possibilities (Di Fabio et al., 2013; Gati, 2013; Gati & Levin, 2015). The first career decisions are made during adolescence, however, some aspects (e.g., the revision of the decisions associated with career development) occur later (Osipow, 1999). In any case, the age of adolescence is very sensitive in terms of career decision-making and emotional difficulties. In the history of career indecision many different approaches have tried to explain how people make career decisions and deal with difficulties. There are major differences between these approaches in the way how they perceive career decision problems, as maladaptive issues or normal phases of the career decision-making process.

In order to examine and investigate career decision-making, various measures were created, especially in the last decade (e.g., Hacker et al., 2013; Lent et al., 2016; Lipschitz-Braziler et al., 2016; Xu, Tracey, 2015).. In the last two decades evidence-based assessments become important in psychology. The APA presented in 2006 the policy for evidence-based practice in psychology, that encouraged that the design of measures should be based on the best available research and clinical expertise. Therefore, an evidence-based assessment must be based on scientific theory, must have good psychometric properties, and the developers must assess possible mistakes, costs and treatment effects. Since many different assessments are available, there is a need for an overview of these measures, including the review of the theory the instrument was derived from and their psychometric properties. Then, the psychometric properties of career decision-making assessments also need to be evaluated, together with their applicability in counselling.

The empirically supported principles must be also applied to interventions for effective psychological practice and enhanced public health (APA, 2006). The evidence-based nature of interventions can be measured by their *efficacy* (how strong is the evidence that establishes the causal relationship between treatment and disorder during intervention) and *clinical utility* (how generalizable and feasible the intervention is and what are the costs and benefits for the client). In vocational psychology specific learning outcome assessments are recommended in order to verify what kind of differences career services make in the client's life (Makela & Rooney, 2012). Some of the career interventions used cognitive theories and methods, like rational emotive behavior therapy (Ellis, 1994), to help the client in dealing with related emotional problems. If an intervention method combines methods which target both career decision-making difficulties and associated emotional or cognitive difficulties, then it represents an ecological mode of delivering intervention for clients. If counselors use combined methods during career intervention, they do not ignore the emotional distress the clients bring to career counseling (Multon et al., 2001).

Although previous research also targeted career-related irrational beliefs with REBT methods, these interventions were solely focused on dysfunctional beliefs, were too long, or targeted only a specific population (e.g., people with disabilities). There is a need for REBT enhanced career interventions which target career decision-making difficulties and emotional distress as well, besides irrational beliefs. Especially towards the end of the high school years, career decision-making can be associated with emotional distress, when students make their first important and formal career decisions. Additionally, to deliver the career course to a large number of participants, it needs to be short, scalable and group-based to make its implementation easier in a school setting. Nevertheless, this also must be done in a systematic way with theory-based career intervention methods. And finally, it must be evidence-based

and scientifically validated, proving its efficiency as superior to an existing active intervention.

Career decision-making difficulties often times lead to negative dysfunctional emotions. The individual might perceive the process of career decision-making as a stressful life event that involves many obstacles and interruptions (Argyropoulou, Sidiropoulou-Dimakakou, & Besevegis, 2007). Multon et al. (2001) found that 60% of the students who sought help in career counseling communicated both career decision-making difficulties and emotional distress. Career decision-making difficulties as lack of information and inconsistent information are associated with negative affect (Bubany, 2011), and those who were still *undecided* at the end of a college preparatory year, experienced increased negative emotions (Anghel & Gati, 2019). In order to increase the motivation of students, also to make career decisions, the intervention should target the individual's stress (Park et al., 2012).

There are studies about the relationship between career decision-making difficulties and emotional distress, however, the causal relationship is not established yet. It is possible that this relationship is bidirectional: career decision-making difficulties can lead to emotional distress, and also emotional distress may lead to career decision-making difficulties (Newman, Fuqua, & Seaworth, 1989; Walker & Peterson, 2012). This logic can be explained by a distinction between career indecision, which is a temporary developmental stage, and career indecisiveness, which is a more chronic form of career decision-making difficulties (Germeijs & De Boeck, 2002). In case of career indecision, emotional distress can be the consequence of the career decision-making difficulties, while in the case of career indecisiveness, career decision-making problems might be the result of emotional distress. Less is known about when and under what circumstances the association between emotional distress and career decision-making difficulties exists, and which factors play important roles in this association. Therefore, further understanding of the possible moderator and mediator factors which influence the association between career indecision and negative dysfunctional emotions is necessary.

CHAPTER II. GENERAL OBJECTIVES AND METHODS OF THE RESEARCH

The research of the thesis would like to contribute to the vocational psychology literature by exploring new associations, reviewing and systematizing existing results, and creating new, valid scientific interventions and methods between career decision-making difficulties and emotional distress. The general objective of this thesis is to integrate the research of the following topics: (1) reviewing and systematizing the career decision-making assessments; (2) exploring the associations between career decision-making and negative dysfunctional emotions; (3) scientifically validated career decision-making assessments and interventions for adolescents.

The **first objective** of this thesis is to synthesize and then evaluate the career decision-making assessments based on an evidence-based approach. Our goal is also to create a classification and framework for these assessments, which can help researchers and career counselors to understand when and how these assessments – and their scales – can be applied in the process of career decision-making. Then, with the evaluation of the assessments we provide information about the measures' psychometric properties and applicability.

The **second objective** of this research is to analyze the measurement invariance of the Career Decision-making Difficulties Questionnaire (CDDQ; Gati et al., 1996). First we plan to test the factorial structure of the CDDQ, by examining the original model and competitive factor models. Then, we aim to evaluate the measurement invariance of the CDDQ across gender, 11th and 12th grade high school classes, languages (Romanian, Hungarian, Hebrew), formats (online and paper-and-pencil), class profiles (natural and social science), living areas (rural or urban), as well as the longitudinal invariance of the assessment. Next, we test the latent mean differences across these groups, so that these differences will not be influenced by measurement error after the establishment of measurement invariance.

The **third objective** of this thesis is to discover the associations between career decision-making difficulties and negative dysfunctional emotions. Therefore, we design a study based on one of the assumptions of the Rational-Emotive Behavior Therapy (REBT) theory. We propose that, based on the transactional model of stress (Lazarus & Folkman, 1984) and cognitive theories (Beck, 1976; Ellis, 1962), worry as a cognition has a moderating effect on the relationship between career decision-making difficulties (i.e., lack of readiness, lack of information, inconsistent information) and psychological distress. We also examine the effect of gender, grade, and participation in a career course as secondary moderators.

The **fourth objective** of this research is to create an REBT enhanced career course for high school students. Rational emotive behavioral therapy, a form of cognitive behavioral therapy provides help for adolescents to efficiently cope with emotional problems (e.g., psychological distress) related to the career decision-making process. The fourth study aims to investigate whether the efficiency of an REBT enhanced career intervention program is superior to a regular career course implemented in school settings. School settings are appropriate to deliver group intervention for students. Classes from Romanian public high-schools are randomized to either REBT-enhanced or regular career intervention group.

III. CHAPTER: ORIGINAL SCIENTIFIC RESEARCH
Study 1.
Challenges and difficulties in career decision making: Their causes, and their effects on the process and the decision[1]

1. Introduction

Career decision making – the process of choosing among career options – has become a frequent and challenging issue in today's world of work. Career decisions are among the most important decisions individuals make in their lifetime (Bimrose & Mulvey, 2015; Gati & Tal, 2008). They may involve choosing an occupation and the educational training involved, then a job and then whether to stay at a job or switch to another one, what formal and informal advanced training to take, and so on. When facing such decisions, many individuals experience difficulties that often prevent making them or lead to choosing a non-optimal alternative. The information and technology revolution (Hirschi, 2018) has affected individuals' career decision making in two ways. First, there is an increasing demand for people in science, technology, engineering, and mathematics (Rottinghaus, Falk, & Park, 2018), although there are many jobs which are liable to disappear because of robotization (Hakanen & Bakker, 2017). Second, information and communication technology facilitated access to various assessments, both during individual career counseling and while using various self-help sites. Thus, career counselors need to continually increase their knowledge and skills and gain new information about the available career decision-making assessments, as well as a setting that can assist them in finding the most appropriate assessment.

To better understand career decision making and facilitate the process, it is important to study the difficulties that might arise prior to or during the process and find their causes. Researchers have attempted to categorize constructs and assessments of career decision-making difficulties. In a review of assessments of career indecision, Tinsley (1992) criticized the ones available then because they were developed without any theoretical conceptualizations. Two decades ago, Eby, Johnson, and Russell (1998) reviewed various career assessments. They distinguished between institutional and personal challenges that an individual might face when making a career choice (entry or re-entry) and during one's career development. Eby et al. (1998) discussed both *content-based* assessments and *process-based* assessments but they did not explicitly distinguish between them. Following this review, several important new assessments that focus on the *process* of career decision making have been developed, motivating the current review. Osipow (1999) organized the assessments of career decision-making difficulties based on the way they approach *career indecision* and *career indecisiveness.* Osipow (1999) showed that these assessments have become more developed and have led to counseling applications, distinguishing between developmental and chronic career decision-problems.

Brown and Rector (2008) reviewed the following assessments of career indecision: Career Decision Profile (CDP; Jones, 1989), the Career Factors Inventory (CFI; Chartrand et al., 1990), the Career Decision Scale (CDS; Osipow et al., 1976) and the Career Decision Difficulties Questionnaire (CDDQ; Gati et al., 1996). Their aim was to discover the most

common causes of career indecision and find patterns among the studies. Brown and Rector (2008) discussed the various research methods used to investigate the latent factors of career decision-making problems: correlations, factor analytic, and cluster analytic. Using a meta-analytic approach, they analyzed 24 intercorrelation matrices and found four major factors: Indecisiveness/Trait Negative Affect, Choice/Commitment Anxiety, Interpersonal Conflicts and Barriers, and Lack of Readiness. Both Osipow's (1999) and Brown and Rector's (2008) reviews focused on assessments of career indecision (and career indecisiveness), while we consider it important to review all the assessments of career decision-making, including those assessing the causes and the outcomes of career indecision, as well those assessing the ways individuals make their decisions.

Xu and Bhang (2019) recently reviewed theoretical and empirical career indecision assessments and structural models. They regard the CDDQ (Gati et al., 1996) and the EPCD (Saka & Gati, 2007) as theory-driven models of indecision, while considering Kelly and Lee's (2002) factor analysis of indecision assessments and Brown and Rector's (2008) meta-analysis-based career indecision profile to be data-driven ones. On the basis of these models and assessments, they defined a five-factor model of career indecision that includes neuroticism/negative affectivity, choice/commitment anxiety, need for information, lack of readiness, and interpersonal conflicts. They proposed that this integrative five-factor model provides a conceptual structure for career indecision. However, their model, which was derived empirically, focused on the measurement of career indecision and reviewed only a limited set of assessments (i.e., CDDQ, EPCD, and CIP). In the present paper we review an expanded set of assessments and categorize them on the basis of theoretical considerations.

Our aim was to compile, evaluate, and organize constructs and assessments of the challenges and difficulties involved in career decision making and refine previous taxonomies for classifying them (briefly reviewed above). The diversity of career decision-making assessments highlights the need for a theoretically-based, systematic classification that looks for the similarities and the differences among the constructs and the assessments that measure them and can help and the most appropriate assessments for counseling and research. After compiling a set of process-related assessments, we developed a system for classifying them into theoretically derived categories and subcategories, based on the assessments' theoretical basis, their goals, the constructs they assess, and their subscales. We then explored the adequacy of our classification by matching it with those of ten professionals.

In the present review we focus on *process-based* assessments – those which describe the way individuals make career decisions (Gati & Levin, 2014), rather than on *content*-based aspects of career decision making – what people can do well (abilities, aptitudes, and skills), or what they value or like to do (work values, vocational interests, and preferences).

In the second part of this review, we briefly describe and evaluate 27 assessments using the Evidence-Based Assessment approach (Hunsley & Mash, 2008), which provides a guideline for evaluating their representation of their theoretical constructs, psychometric properties, and applicability. First, we present information about the types of assessments included in Fig. 1. Then, we identified the foci of each assessment, which can help to locate available assessments of the construct one is interested in. After overviewing the reliability and validity data of each instrument, we evaluated how far the psychometric data support the instrument's scientific accuracy.

2. Method

An initial list of studies using career decision-making assessments was compiled from PsycINFO, Scopus, Web of Science, Cochrane, and PubMed databases. We used the following keywords for the search: *career indecision* OR *career decision-making problem* OR *career-decision difficulty* AND *measure* OR *assessment* OR *scale* OR *questionnaire*. To

be included in this list, the studies had to meet all the following criteria: the instruments must have been empirically tested, and they must involve to the career decision-making *process*. In the 16,343 papers that matched the search criteria, we identified 27 assessments that we judged as measuring constructs of the challenges and difficulties involved in career decision making. The proposed taxonomy of these assessments is summarized in Fig. 1, and the specific categories and subcategories are presented in Figs. 2–5.

Figure 1. The proposed framework for constructs and assessments of the career decision-making process

ANTECEDENTS

READINESS
Dysfunctional Career Beliefs

Career Decision-making Self-Efficacy

Willingness

General Indecisiveness

ORIENTATION

Career Decision-making Styles/Profiles

Coping with Career Decision-Making

Adaptability

INFORMATION

LACK of INFORMATION about	**USE of INFORMATION**
the Self	**Unreliable Information**
the World of Work	**Internal Conflicts**
How to Make Career Decisions	**External Conflicts**

EFFECTS ON THE PROCESS
- avoid entering the process
- halt the process before making a decision
- make a decision (optimal, non-optimal)

EFFECTS ON THE DECISION
Career Decision Status
Feelings about the Process
Feelings about the Outcome

3. Results

In the classification process we first created clusters of process-based assessments and then assigned the assessments into the subcategories, taking four criteria into consideration: (a) the purpose of the assessment, (b) the theory it was derived from, (c) the scales and the similarity among them, and (d) the construct(s) underlying the instrument (and its scales). After analyzing the assessments, we classified them into homogenous categories/subcategories. The three main categories are presented in Fig. 1 – *Antecedents,*

Effects on the Process, and *Effects on the Decision. Effects on the process* does not include assessments but refers to three possible consequences of the *Antecedents* on career decision making, as directly reported by the individual, or as judged by his or her counselor: (a) avoiding entering the process; (b) halting the process before making a decision; and (c) making a decision – an optimal, sub-optimal, or clearly not optimal one.

Antecedents of career decision-making

Readiness. This first category in *Antecedents* is the individual's readiness to cope with impediments along the way to making a career decision Its subcategories (dysfunctional career beliefs, career decision-making self-efficacy, willingness, and general indecisiveness) describe how prepared the individual is to make a career decision, and the causes that underlie the individual's lack of readiness in the case of difficulties.

Figure 2. Assessments of Antecedents of career decision making – Readiness

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READINESS

Dysfunctional Career Beliefs
Career Beliefs Inventory (CBI; Krumboltz, 1991; 1994)
Career Myths Scale (CMS; Stead & Watson, 1993)
Career Thoughts Inventory (CTI; Sampson et al., 1996; 1998)
Career Decision-making Difficulties Questionnaire–*dysfunctional beliefs* (CDDQ, Gati et al., 1996)
Dysfunctional Career Beliefs (DCB; Hechtlinger, Levin, & Gati, 2018)

Career Decision-making Self-Efficacy
Career Decision-Making Self-Efficacy Scale (CDMSE; Taylor & Betz, 1983; Betz, Klein, & Taylor 1996)
Career Assessment Diagnostic Inventory–*career self-efficacy* (CADI; Vidal-Brown & Thompson, 2001)
Career Planning Confidence Scale (CPCS; McAuliffe et al., 2006)
Career Adapt-Abilities Scale – *confidence* (CAAS; Savickas & Porfeli, 2012)
Career and Work Adaptability Questionnaire – *confidence* (CWAQ; Nota et al., 2012)
Career Decision Ambiguity Tolerance – *confidence* (CDAT; Xu & Tracey, 2015)

Willingness
Career Decision Profile – *low choice importance* (Jones, 1989)
Career Decision-making Difficulties Questionnaire – *lack of motivation* (CDDQ; Gati et al., 1996)
Career Indecision Profile – *lack of readiness* (CIP; Hacker et al., 2013)

General Indecisiveness
Career Decision Profile – *generalized indecisiveness* (Jones, 1989)
Career Factors Inventory – *general indecisiveness, self-esteem, career choice anxiety* (CFI; Chartrand et al., 1990)
Career Decision-making Difficulties Questionnaire – *general indecisiveness* (CDDQ, Gati et al., 1996)
Career Assessment Diagnostic Inventory – *decision-making anxiety, identity development* (CADI; Vidal-Brown & Thompson, 2001)
Career Indecisiveness Scale (CIS; Germeijs & De Boeck, 2002)
Emotional and Personality-related Career Difficulties (EPCD, Saka & Gati, 2007)
Career Indecision Profile – *neuroticism/negative affectivity, commitment anxiety* (CIP; Hacker et al., 2013)

Orientation. The second category of *Antecedents* is Orientation, which describes how the individual approaches career decision-making. This category includes assessments that measure decision-making style, career decision-making coping strategies, and career decision-making adaptability. The subcategories of Orientation and the assessments included in them are presented in Fig. 3.

Figure 3. Assessments of Antecedents of career decision making – Orientation

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ORIENTATION

Career Decision-Making Styles/Profiles
Decision-Making Questionnaire (DMQ; Krumboltz et al., 1979)
Assessment of Career Decision-Making (ACDM; Harren, 1979; Buck & Daniels, 1985)
Career Assessment Diagnostic Inventory – *emotional independence* (CADI; Vidal-Brown & Thompson, 2001)
Career Decision-Making Profile (CDMP; Gati et al., 2010; Gati, Gadassi, & Mashiah-Cohen, 2012)
Career Decision-making Ambiguity Tolerance (CDAT; Xu & Tracey, 2015) *– preference, tolerance, aversion*

Coping with Career Decision-Making
Career Locus of Control (CLOC; Millar & Shevlin, 2007)
Career Decision-Making Profile – *locus of control* (CDMP; Gati et al., 2010; Gati, Gadassi, & Mashiah-Cohen, 2012)
Strategies for Coping with Career Indecision (SCCI; Lipshits-Braziler, Gati, & Tatar, 2016)

Adaptability
Career Maturity Inventory (CMI; Crites, 1973)
Adult Career-Concern Inventory (ACCI; Super et al., 1988)
Career Adapt-Abilities Scale – *concern, control, curiosity* (CAAS; Savickas & Porfeli, 2012)
Career and Work Adaptability Questionnaire – *control, cooperation, curiosity, concern* (CWAQ; Nota et al., 2012)

Information. We suggest distinguishing between *Lack of information* which indicates the individual's need for additional information, and *Use of information*, which denotes cases where the relevant information is available, but because of some inconsistency or incompatibility in it, the individual encounters difficulty in using it for comparing the alternatives and choosing one. The subcategories of the Information category and the assessments included are presented in Fig. 4.

Effects on the career decision-making process

We could not find any assessments involving this facet of career decision making, which describes the effects of difficulties that individuals encounter during the process: (a) avoiding beginning the career decision-making process, (b) halting it before reaching a decision, or (c) choosing a less than optimal alternative.

Figure 4. Assessments of Antecedents of career decision making – Information

INFORMATION	
LACK OF INFORMATION	**USE OF INFORMATION**
ABOUT THE SELF **Career Decision Profile –** *self-clarity* (Jones, 1989) **Career Factors Inventory –** *need for self-knowledge* (CFI; Chartrand et al., 1990) **Career Decision-making Difficulties Questionnaire –** *lack of information about the self* (CDDQ, Gati et al., 1996)	**UNRELIABLE INFORMATION** **Career Decision-making Difficulties Questionnaire –** *unreliable information* (CDDQ, Gati et al., 1996)
ABOUT THE WORLD OF WORK **Career Development Inventory –** *career explorations; world of work information; knowledge of the preferred occupational group* (CDI; Super et al., 1979) **Career Decision Profile –** *knowledge about occupations and training* (Jones, 1989) **Career Factors Inventory –** *need for career information* (CFI; Chartrand et al., 1990) **Career Decision-making Difficulties Questionnaire –** *lack of information about occupations; lack of information about ways of obtaining information* (CDDQ, Gati et al., 1996) **Career Assessment Diagnostic Inventory –** *career information* (CADI; Vidal-Brown & Thompson, 2001)	**INTERNAL CONFLICTS** **Career Decision-making Difficulties Questionnaire –** *internal conflicts* (CDDQ, Gati et al., 1996)
HOW TO MAKE CAREER DECISIONS **Career Development Inventory –** *career planning; decision making* (CDI; Super et al., 1979) **Career Decision-making Difficulties Questionnaire –** *lack of information about the decision-making process* (CDDQ, Gati et al., 1996)	**EXTERNAL CONFLICTS** **Career Decision-making Difficulties Questionnaire –** *external conflicts* (CDDQ, Gati et al., 1996) **Career Assessment Diagnostic Inventory –** *family conflict* (CADI; Vidal-Brown & Thompson, 2001) **Career Indecision Profile –** *interpersonal conflicts* (CIP; Hacker et al., 2013)

Effects on the decision

This facet is comprised of assessments aimed at assessing the individual's (a) career decision status, (b) feelings about the process, and (c) about its outcome.

Figure 5. Assessments of the Effects on the Decision

EFFECTS ON THE DECISION
Career Decision Status **Occupational Alternatives Question** (OAQ; Slaney, 1980; Zener & Schnuelle, 1976) **Career Decision Profile** (CDP; Jones, 1989) *decidedness* **Range of Considered Alternatives** (RCA; Gai, Kleiman, Saka & Zakai, 2003) **Career Decidedness** (CD; Penn & Lent, 2016; Ireland & Lent, 2018)
Feelings About the Process *Satisfaction with the progress of the process*   **Career Decision Profile** (CDP; Jones, 1989) *– comfort* *Confidence in the process*
Feelings About the Outcome *Confidence in one's Decision* *Commitment to the Choice* *Career Choice Certainty* *Satisfaction with the Consequences of the Choice*

4. Discussion

Focusing on the challenges and difficulties of the career decision-making process, we presented, analyzed, and explored three facets of career decision-making – *Antecedents, Effects on the process,* and *Effects on the decision*. Most of the assessments included in our classification system are based on theories directly or indirectly involving career decision-making, with the exception of the CADI (Vidal-Brown & Thompson, 2001), which was designed on the basis of the researchers' experience, without any explicit theoretical conceptualization. Our goal was to review the assessments of the career decision-making process and categorize them into distinct groups based on the constructs they measure. We begin with the discussion of the *Antecedents* and its relations with the other facets.

Special features of the present review

Compared to previous reviews, we believe that our categorization has a special contribution to the literature. Eby et al. (1998) categorized assessments of career decision making based on their utility in various institutional and personal career issues associated with career choice (entry or re-entry) and career development. We, however, classified them based on their utility in detecting difficulties at the various stages of the process (i.e., prior to engagement in it and during the process). Osipow's (1999) review distinguished between assessments of career indecision and career indecisiveness, while we tried to go further and organize the scales and measures which assess the causes of these two factors. Brown and Rector (2008) had a major impact on the career indecision literature, but lack of information, one of the most frequent and most important causes of career indecision, is missing from their dimensions of career indecision. In our categorization, we distinguished between difficulties that stem from lack of information and those associated with the use of available information.

Xu and Bhang (2019) reviewed theory-driven models (CDDQ; Gati et al., 1996; EPCD; Saka, Gati, & Kelly, 2008) and data-driven models (Brown & Rector, 2008; Kelly & Lee, 2002) of indecision. They proposed an integrative five-factor model including lack of readiness, neuroticism/negative affectivity, choice/commitment anxiety, lack of information, and interpersonal conflicts. However, Xu and Bhang (2019) did not distinguish between readiness and orientation, as we did in our review, and they did not discuss career decision-making styles, coping with career decision-making, or adaptability.

We adopted and adapted Hunsley and Mash's (2008) guide of psychometric properties. We adopted their criteria for evaluating internal consistency reliability, test-retest reliability, and construct validity. We also include information about the utility and applicability of each assessment. Hunsley and Mash (2008) defined six categories for evaluating the psychometric qualities: *excellent, good, adequate, less than adequate, unavailable*, or *not applicable*. *Excellent* means superior scientific supporting evidence of the psychometric aspects of the measure, *good* indicates satisfactory evidence, and adequate means that the assessment meets the minimum criteria of scientific accuracy; less than adequate indicates that the instrument didn't reach the minimum level of scientific criteria, and not applicable implies that there is no psychometric data for evaluating the assessment yet.

We added a complementary appraisal category to Hunsley and Mash's (2008) evaluation guide – convergent, divergent, concurrent, and predictive validity – and defined specific criteria for each one. *Not applicable* indicates that there is no data about validity results, and *less than adequate* means that the measure didn't reach the minimum level of our criteria. We adopted Cohen's (1988) criterion for the effect size of correlations (weak 0.10, moderate 0.30, strong 0.50). For convergent validity, we regard results as *adequate* if the assessment has moderate to high correlation with one convergent variable, *good* means moderate to high correlations with 2–3 convergent variables, and *excellent* indicates high

correlations with more than three convergent variables. In case of divergent validity, *adequate* means low or negligible correlation with one divergent variable, *good* indicates low correlations with 2–3 divergent variables, and *excellent* means weak or negligible correlations with more than three variables. For concurrent validity, *adequate* level indicates that the assessment had moderate to high correlation with one criterion, *good* indicates moderate to high associations with 2–3 criteria, and excellent means moderate to high correlations with more than three criteria. Finally, for predictive validity we consider only those results where the criterion was measured 3 or more months later. *Adequate* predictive validity indicates moderate association with one criterion, *good* means moderate to strong associations with 2–3 criteria, and *excellent* indicates moderate to strong associations with more than three criteria. If the time between the two assessments was one year or more, the predictive validity was "upgraded" by one level (e.g., from *good* to *excellent*).

Psychometric properties of the assessments. The internal-consistency reliability of seven assessments was rated as *excellent*, nine as *good*, and seven as *adequate*. For test-retest reliability 11 assessments were rated as adequate and three as good. The reliability of the other assessments was rated as *less than adequate* or *not applicable*. As for convergent validity, nine assessments were evaluated as *excellent*, six as *good*, and five as *adequate*; the divergent validity of eight assessments were rated as *excellent* and three as *good*. The concurrent validity of five assessments' was evaluated as *excellent*, of six as *good*, and of four as a*dequate,* whereas the predictive validity of only one assessment was evaluated as *excellent,* four were considered *good,* and three *adequate*. We evaluated the validity of the remaining assessments as either *not applicable* or *less than adequate*.

We presented a classification of assessments involving career decision-making challenges, based on a categorization of the constructs they assess and the theoretical basis they rely on. The proposed categorization and the subsequent classification of the assessments can help in clarifying when and for what types of problem each assessment (or each (sub)scale of a multidimensional assessment) can be used. We also presented the assessments' psychometric properties and information about their applicability. The categorization presented in Figs. 1 to 5 and the tables with the relevant information can assist career counselors in finding assessments of the career decision-making process more easily, using them at the appropriate stage of the process, and tailoring their interventions to the client's specific needs as they emerge when the most appropriate assessment was used. However, career counselors also need to consider content-based career decision-making variables like abilities, preferences, and personality, as well as other types of antecedents (e.g., emotional problems) and environmental factors. The proposed categorization and the information about the psychometric properties of the assessments and can also be useful for researchers interested in assessing various facets of career decision-making. To sum up, we hope that our review will help career counselors and researchers when considering and deciding which process-based career decision-making assessment(s) to use.

Study 2.
The Career Decision-Making Difficulties Questionnaire: Measurement Invariance across
Gender, Class, Language, Format, Class Profile, Living Area and Longitudinal Invariance[2]

1. Introduction

Since career indecision is one of the most important problems in vocational psychology and it is a core construct which is usually assessed first in career counseling, it is of key importance to use a well-established assessment method with a theoretical basis and good psychometric properties. The Career Decision-making Difficulties Questionnaire (CDDQ; Gati, Krausz, & Osipow, 1996) is one of the most well-known assessments which measures career indecision in individuals. The assessment was developed on a taxonomy derived from the decision-making theory (e.g., Gati, 1986; Jepsen & Dilley, 1974; Pitz & Harren, 1980). The CDDQ originally consisted of 44 items, with each item representing a particular career decision-making difficulty. The new and revised version consists of 34 items (Gati & Saka, 2001a), including two validity items. The 34-item version is available in electronic and paper-and-pencil format as well.

The original taxonomy, and therefore the structure of the questionnaire is based on the items, scale scores, cluster scores, and the total score (32-10-3-1). The three clusters (and the ten scales) are: *Lack of Readiness (lack of motivation, general indecisiveness, dysfunctional beliefs), Lack of Information (lack of knowledge about the process, lack of information about self, lack of information about occupations, lack of information about the ways of obtaining information), and Inconsistent Information (unreliable information, internal conflicts, and external conflicts).* The structural validity of the CDDQ was supported in previous studies – the empirical structure of the ten scales was highly similar or identical to the one proposed in the theoretical model (Bacanli, 2016; Creed & Yin, 2006; Gati, Osipow, Krausz, & Saka, 2000; Hijazi et al., 2004; Kleiman & Gati, 2004; Sovet, DiMillo, & Samson, 2017).

However, in other studies, contradictory evidence was found for the factor structure of the CDDQ. For example, analyses of the factor structure and validity of the Croatian version of the CDDQ (Babarović & Šverko, 2016) have indicated that the dysfunctional beliefs scale had a low and non-salient factor loading onto the expected factor, therefore the authors suggested that this scale is excluded from the CDDQ model. Similarly, the factor analyses on the Korean version of the CDDQ (Sovet, Tak, & Jung, 2015) showed that the dysfunctional beliefs scale was particularly lacking internal consistency, and a 9-factor model had better fitting indices than the original 10-factor one. In the study of Albion & Fogarty (2002), the five first-order factor model was a better fitting model than the three first-order factor one. These results urged the need to test the original dimensionality of the CDDQ (Levin, Braunstein-Bercovitz, Lipshits-Braziler, Gati, & Rossier, 2020) with three possible models: (a) the original model (32-10-3-1); (b) two second-order factor model (32-10-2-1); and (c) nine first-order-factor model (28-9-3-1). After comparing the fit indices of the three models, the authors decided to create a final model from the original one (32-10-3-1) and reported adequate fit of the model after adding three error covariances.

Previous studies aimed at assessing measurement invariance of the CDDQ across gender, language, and age. For example, measurement invariance across gender groups was tested on a Korean sample (Sovet et al., 2015) and showed metric equivalence across gender. Sovet et al. (2015) suggested measuring the gender invariance on other groups like high

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[2] The manuscript of this study is under preparation for submission. The authors contributed to the article as follows: Kulcsár, V.: conceptualization, methodology, writing – original draft, visualization; Balázsi, R.: conceptualization, methodology, formal analysis, writing – review & editing; supervision; Dobrean, A.: conceptualization, methodology, writing – review & editing, visualization, supervision; Gati, I.: writing – review & editing, supervision.

school students, and because they used both paper-and-pencil and internet forms, the equivalence of these two survey formats needs to be tested in the future. In the Croatian version of the CDDQ, only a metric invariance was reached across two age samples (first grade and final grade secondary school students), which indicates difficulties in comparing latent means across groups (Babarović & Šverko, 2016). The measurement invariance of the CDDQ on a scalar level was confirmed across languages (i.e., English and French) in Canada (Sovet et al., 2017). While the results were good, Sovet et al. (2017) suggested that they are probably not generalizable to other minority contexts, since the Franco-Ontarian milieu of Canada is specific. Scalar invariance of the CDDQ was also demonstrated across genders and cultures (i.e., Switzerland and Burkina Faso; Atitsogbe, Moumoula, Rochat, Antonietti, & Rossier, 2018). In this study university students and adult workers were tested, and Atitsogbe et al. (2018) suggested testing it on younger population (i.e., high school students) who are still before making the decision about their career. In the recent study of Levin et al., (2020) the measurement invariance of the English version of the CDDQ was tested on a large sample (N=32,556) across seven countries (Australia, Canada, China, India, South Africa, United Kingdom, the United States of America), and found scalar invariance for country. Scalar invariance was also found across age (i.e., adolescents and young adults) and gender groups (Levin et al., 2020).

We would like to establish the invariance across formats, the longitudinal invariance of the CDDQ, and across class profiles, living areas, and languages. In our study we aim to determine first the factorial structure of the CDDQ. Next, we aim to replicate the invariance results on our samples for gender, high school class and language, and then to test for the first time the invariance across format, high school class profile, living area, and longitudinal invariance.

2. Method

2.1 Participants

The participants were from eight high-schools in Romania: Romanian high school students (n = 540, 57.6% girls, 41.7% from the 11th grade, their age ranged between 16-19 years, M_{age} = 17.8; SD = .71); Hungarian high-school students (n = 282, 54.3% were girls, 45% from the 11th grade, their age ranged between 15 to 19, M_{age} = 17.4; SD = .55). The Israeli participants were from a College Preparatory program (n = 483, 42.1% were girls).

2.2 Measure

Career Decision-making Difficulties Questionnaire (Gati, Krausz, & Osipow, 1996) is a multidimensional, multilevel assessment of career decision-making difficulties. The revised and shortened version of the CDDQ has 34 items (Gati & Saka, 2001b), with a 9-point response scale (1 = "Does not describe me at all." to 9 = "Describes me well"), including two validity items. The individual's difficulties are captured by a 10-scale score profile corresponding to the 10 difficulty, each defined as the mean of the responses to the items included in the category. Therefore, the scale scores, cluster scores and the total score all range from 1 to 9. The CDDQ is available in two versions: paper and pencil (with hand scoring) and online; both are free. The instrument was developed cross-culturally (with both Israeli and American samples). The empirical structure of the ten scales was very similar or identical to the one proposed in the theoretical model (Gati et al., 1996; Gati & Saka, 2001b; Kleiman & Gati, 2004). The English version was translated to Romanian and Hungarian, and it was back-translated to English. The back-translation was verified and approved by the first author of the instrument (Itamar Gati). The internal consistency Cronbach α reliability estimates for the total score of the CDDQ in our dataset was .94.

2.3 Procedure

The study with the Romanian and Hungarian adolescents was approved by the Ethics Committee of the Babeș-Bolyai University, whilst the one with the Israeli students was

approved by the Hebrew University of Jerusalem, and both were approved by the principles of the eight participating high-schools. Students older than age 18 could sign the consent forms on their own, while a parent's signature was required for students under the age 18. Consent forms were signed and collected before applying the assessment. The data was collected by researchers and research assistants in the students' classrooms, after describing the procedure of the study, giving instructions to the participants and responding to possible questions. Then, the participants filled out the questionnaire, which took approximately 15 minutes.

2.4 Data Analysis

Confirmatory factor analysis (CFA) was employed to assess the construct validity of the CDDQ. The model fit was assessed with various goodness-of-fit indices for the CFA, including chi-square (χ^2), the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). We tested five models. Then, with the chosen model a multi-group confirmatory factor analysis (MGCFA) was conducted to examine the factorial invariance of the CDDQ and the latent mean differences across gender, class, language, format, class profile, rural-urban, and time points. The fit indices used for the MGCFA are χ^2, df, CFI, SRMR, RMSEA, and the changes in the model fit indices ($\Delta\chi^2$, ΔCFI, ΔRMSEA). The factorial invariance and latent mean structure analyses were tested by applying CFA with maximum likelihood registration (MLR) algorithm estimation in MPlus 8.2.

3. Results

3.1 Descriptive Statistics

The means of the items ranged between 2.36 (Ie1) to 6.77 (Rd3). Then, univariate skewness and kurtosis of the items were computed. The values of univariate skewness ranged from -.93 to 1.62, and the values of univariate kurtosis ranged between -1.30 to 1.63.

Table 1

Correlations among the ten scales of the CDDQ

	Rm	Ri	Rd	Lp	Ls	Lo	La	Iu	Ii	Ie
Rm	-									
Ri	.291**	-								
Rd	.148**	.127**	-							
Lp	.472**	.551**	.102**	-						
Ls	481**	.496**	.063*	.750**	-					
Lo	.401**	.469**	.049	.709**	.728**	-				
La	.406**	.484**	.097**	.716**	.754**	.776**	-			
Iu	.463**	.473**	.106**	.643**	.719**	.700**	.705**	-		
Ii	.467**	.457**	.091**	.647**	.685**	.690**	.677**	.742**	-	
Ie	.390**	.327**	.148**	.483**	.491**	.472**	.508**	.578**	.562**	-
N	1320	1320	1320	1320	1320	1315	1314	1314	1314	1312
Mean	2.71	4.90	4.93	3.71	3.36	3.74	3.32	3.10	3.39	2.47
SD	1.69	2.11	1.89	2.26	2.09	2.27	2.26	1.96	1.83	1.86

Note. Rm = Readiness – Lack of motivation; Ri = General Indecisiveness; Rd = Dysfunctional beliefs; Lp = Lack of Information about the stages of the career decision-making process; Ls = Lack of Information about the self; Lo = Lack of Information about the occupations; La = Lack of Information about ways of obtaining additional information; Iu = Inconsistent Information – unreliable information; Ii = internal conflicts; Ie = external conflicts. *Correlation is statistically significant at *p*<.05 level.; **Correlations are statistically significant at *p*<.001 level.

3.2 Whole sample CFA

We tested various different models with CFA analysis, the summary of the models with the fit indices are presented in Table 2.

Table 2

The applied models used to test the factor structure of the CDDQ.

Model structure	χ^2	df	p	CFI	TLI	SRMR	RMSEA 95%CI
32-10-3-1	1490.40	451	.001	.914	.905	.054	.048 [.045, .050]
32-10-2-1	1491.31	452	.001	.914	.906	.054	.047 [.045, .050]
28-9-3-1	1159.79	338	.001	.925	.916	.042	.049 [.046, .052]
32-10-1	1581.13	454	.001	.907	.898	.055	.049 [.047, .052]
32-3-1	2488.75	461	.001	.832	.820	.053	.066 [.063, .068]

Note. χ^2 = Chi-square; df = degrees of freedom, p = significance, CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA 95% CI = Root Mean Square Error of Approximation 95% Confidence Interval.

3.2.1 The original model (32-10-3-1). The original model of the CDDQ is a hierarchical structure, which consists of 32 items loaded into 10 scales, which form 3 clusters, then a single total score is computed. The results for the original model of the CDDQ showed a good degree of fit.

3.2.2 The two-cluster model (32-10-2-1). Second, we tested a model with the 32 items form ten scales from which the three scales of the Lack of Readiness load directly into the total score. The fit indices of this model were similar, or almost identical with the original model's fit indices.

3.2.3 The nine-scale model (28-9-3-1). In the third model the four items of the dysfunctional beliefs scale are excluded, and hence the dysfunctional beliefs scale was deleted. This model also showed good fit indices, slightly better than the original model.

3.2.4 The model without the clusters (32-10-1). Fourth, we also tested a model, which did not include the cluster level of the CDDQ's hierarchical structure. The model without the clusters also showed acceptable fit indices, however, eliminating the cluster level from the hierarchical factor structure of the CDDQ actually slightly decreased the fit indices.

3.2.5 The model without the scales (32-3-1). Fifth, we tested a model in which we eliminated the ten scales from the structure of the CDDQ. The 32 items were loaded directly into the three clusters, and then into one single total score. The model without the scales showed lower fit indices especially in CFI and TLI compared to the original model.

3.2.6 The selected model. The final model we decided to choose was the original hierarchical structure of the CDDQ with 32 items, ten scales, three clusters and one total score (32-10-3-1), which showed good fit indices, and all of the 32 items showed significant factor loadings ($p < .001$) to their scales with acceptable values (Table 3).

3.3 Measurement Invariance – Multigroup Analyses

3.3.1 Gender invariance. The measurement invariance was tested first across gender groups. The single-group CFA fit indices were similar for the two groups (Table 4). The results of the multigroup CFA showed that the baseline model (configural invariance), the metric invariance and scalar invariance across gender all showed good fit of data. The difference between the configural and metric, then between the metric and scalar invariance in the fit indices (ΔCFI, ΔRMSEA) were below the 0.01 cut-off point (Hu & Bentler, 1999). All results from the multi-group fit indices and changes in the fit indices are presented in Table 5. The measurement invariance of the CDDQ across gender groups holds.

Table 3

Factor loadings of the items to their scales respectively.

Factor	Item	Unstandardized factor loadings	S.E.	Est./S.E.	p	Unstandardized factor loadings	R^2
Lack of motivation	Rm1	1.000	-	-	-	.759	.576
	Rm2	.474	.055	8.682	.001	.415	.173
	Rm3	.717	.066	10.89	.001	.572	.328
Indecisiveness	Ri1	1.000	-	-	-	.714	.510
	Ri2	1.083	.068	15.86	.001	.721	.519
	Ri3	.893	.058	15.45	.001	.59	.348
Dysfunctional beliefs	Rd1	1.000	-	-	-	.335	.112
	Rd2	1.614	.264	6.118	.001	.622	.387
	Rd3	1.222	.169	7.222	.001	.495	.245
	Rd4	1.62	.249	6.515	.001	.553	.306
Lack of info. process	Lp1	1.000	-	-	-	.864	.746
	Lp2	1.002	.022	45.291	.001	.898	.806
	Lp3	.945	.034	27.426	.001	.787	.620
Lack of info. self	Ls1	1.000	-	-	-	.714	.510
	Ls2	1.096	.042	26.049	.001	.769	.591
	Ls3	1.182	.05	23.418	.001	.837	.701
	Ls4	1.055	.053	19.731	.001	.778	.605
Lack of info. occupations	Lo1	1.000	-	-	-	.890	.792
	Lo2	.922	.019	47.351	.001	.857	.734
	Lo3	.78	.031	25.514	.001	.733	.538
Lack of info. additional i.	La1	1.000	-	-	-	.803	.644
	La2	1.022	.036	28.458	.001	.820	.673
	Iu1	1.000	-	-	-	.736	.542
Unreliable information	Iu2	.893	.041	22.03	.001	.676	.456
	Iu3	.889	.04	22.126	.001	.733	.537
Internal conflicts	Ii1	1.000	-	-	-	.606	.367
	Ii2	.727	.06	12.103	.001	.501	.251
	Ii3	1.063	.064	16.713	.001	.680	.462
	Ii4	1.084	.054	19.962	.001	.687	.472
	Ii5	.816	.059	13.902	.001	.613	.376
External conflicts	Ie1	1.000	-	-	-	.612	.375
	Ie2	1.297	.087	14.928	.001	.831	.691

Note. Lack of info. process = Lack of information about the process; Lack of info. self = Lack of information about the self; Lack of info. occupations = Lack of information about occupations; Lack of info. additional i. = Lack of information about ways of obtaining additional information; S.E. = Standard Error; Est./S.E. = Estimate/Standard Error.

3.3.2 Class invariance. Second, the measurement invariance was tested for two high-school classes (11th grade, 12th grade). Fit indices for the single-group CFA were very similar for the two classes (Table 4). The model showed acceptable fit indices for configural, metric and scalar invariance (Table 5). The invariance of the CDDQ across 11th grade and 12th grade high-school classes can be established.

3.3.3 Language invariance. Third, we tested the language invariance of the CDDQ among Romanian, Hungarian and Hebrew language groups. The single-group CFA fit indices were similar, with slightly better fit indices for the Romanian language group (Table 4). The model showed acceptable fit indices in case of configural and metric invariance (Table 5). The scalar invariance was only partially established, but the fit indices for the difference between the metric and the scalar model were in the acceptable range. Therefore, the scalar measurement invariance across the language groups in our dataset is only partially established.

Table 4

Fit Indices for the Single Group Confirmatory Factor Analysis of the CDDQ measurement invariance

Invariance categories		χ^2	*df*	*p*	CFI	SRMR	RMSEA 95%CI
Gender	Male (N=479)	799.796	419	.001	.929	.053	.044 [.039, .048]
	Female (N=540)	1026.53	419	.001	.911	.057	.052 [.048, .056]
Class	11 (N=253)	796.862	419	.001	.887	.061	.060 [.053, .066]
	12 (N=202)	716.394	419	.001	.891	.063	.059 [.052, .067]
Language	Romanian (N=379)	880.953	419	.001	.908	.055	.054 [.049, .059]
	Hungarian (N=224)	777.247	419	.001	.874	.064	.062 [.059, .069]
	Hebrew (N=417)	899.075	419	.001	.888	.075	.052 [.048, .057]
Format	Paper-pencil (N=838)	1221.968	419	.001	.918	.055	.048 [.045, .051]
	Online (N=182)	761.338	419	.001	.857	.069	.067 [.059, .075]
Class profile	SH (N=209)	686.821	419	.001	.901	.059	.056 [.048, .063]
	N (N=250)	805.511	419	.001	.884	.058	.061 [.054, .067]
Living area	Rural (N=94)	706.916	419	.001	.821	.080	.085 [.074, .096]
	Urban (N=466)	1006.578	419	.001	.901	.053	.055 [.051, .059]

Note. χ^2 = Chi-square; *df* = degrees of freedom, *p* = significance, CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; RMSEA 95% CI = Root Mean Square Error of Approximation 95% Confidence Interval.

3.3.4 Format invariance. Fourth, we tested the format invariance of the CDDQ across online and paper-and-pencil format groups. The results of the single-group CFA showed that some of the fit indices for the paper-and-pencil format were slightly better, than the same indices for the online format, but all fit indices were situated in the acceptable range (Table 4). The results of the multi-group CFA are presented in Table 5, including the results for the two format groups. Setting constraints progressively to the model for establishing configural, metric and scalar invariance did not decrease significantly the fit of the model, which in turn supported the CDDQ's measurement invariance across different formats.

3.3.5 Class profile invariance. Fifth, we tested the invariance of the CDDQ across different class profiles, more specifically across classes with social and humanistic science and natural science profiles. The results of the single-group CFA showed that the fit indices for classes were situated in the acceptable range (Table 4). The results for the multigroup CFA (Table 5) across class profiles showed acceptable fit indices for configural, metric, and scalar invariance. The fit indices for the difference between configural and metric, and metric and scalar invariance were below the established cut-off (0.01). Therefore, based on these results, the invariance of the CDDQ across class profiles can be established.

3.3.6 Living area invariance. Sixth, we tested the invariance of the CDDQ for living areas of the participants (across rural and urban areas). The fit indicators of the single-group and multigroup CFA results were all in the acceptable range (Tables 4, 5). The fit indices for the difference among configural, metric and scalar invariance were below the cut-off of 0.01. Progressively imposed constraints did not modify significantly the fit of the model with the data, therefore measurement invariance across rural and urban groups can be assumed.

3.3.7 Longitudinal invariance. In the end we also tested the longitudinal invariance of the CDDQ. All results of the longitudinal invariance analysis are included in Table 5. First we tested the configural invariance of the CDDQ and the results showed acceptable fit indices. The metric invariant model also showed fit indices in the acceptable range, and the fit indices regarding the difference between the configural and metric invariance (ΔCFI, ΔRMSEA) were below the established 0.01 cut-off point. Then, the scalar invariance was tested across time points and the fit indices for the scalar longitudinal invariance also showed

an acceptable fit, and the ΔCFI and ΔRMSEA were also lower than the 0.01 cut-off point. Based on these results we can assume the measurement invariance of the CDDQ across timepoints (longitudinal invariance).

Table 5

Fit indices for the multigroup confirmatory factor analysis of the CDDQ measurement invariance

	χ^2	df	p	CFI	RMSEA	$\Delta\chi^2$	Δdf	ΔCFI	ΔRMSEA
				Gender categories[*]					
Configural	2299.822	838	.001	.910	.059	-	-	-	-
Metric	2348.463	870	.001	.909	.058	48.641	32	-0.001	-0.001
Scalar	2463.881	892	.001	.904	.058	115.418	32	-0.005	0
				Class categories[*]					
Configural	1772.433	838	.001	.877	.070	-	-	-	-
Metric	1809.219	870	.001	.876	.069	36.786	32	-0.001	-0.001
Scalar	1829.383	892	.001	.876	.068	20.164	22	0	-0.001
				Language categories					
Configural	3149.700	1257	.001	.882	.067	-	-	-	-
Metric	3355.176	1321	.001	.873	.067	205.476	64	-0.009	0
Scalar	3506.723	1343	.001	.865	.069	151.547	22	-0.008	0.002
				Format categories[*]					
Configural	2441.30	838	.001	.900	.061	-	-	-	-
Metric	2492.38	870	.001	.899	.060	51.08	32	-0.001	-0.001
Scalar	2653.26	892	.001	.89	.062	160.88	22	-0.009	0.002
				Class profile categories[*]					
Configural	1739.490	838	.001	.880	.069	-	-	-	-
Metric	1766.961	870	.001	.880	.067	27.471	32	0	-0.002
Scalar	1812.600	892	.001	.877	.067	45.639	22	-0.003	0
				Living area categories[*]					
Configural	2028.425	838	.001	.876	.071	-	-	-	-
Metric	2078.457	870	.001	.874	.070	50.032	32	-0.002	-0.001
Scalar	2135.515	892	.001	.87	.071	57.058	22	-0.004	0.001
				Longitudinal Invariance					
Configural	3978.740	1731	.001	.881	.041	-	-	-	-
Metric	3928.827	1753	.001	.885	.041	-49.913	22	0.004	0
Scalar	3996.532	1775	.001	.883	.041	67.705	22	-0.002	0

Note. χ^2 = Chi-square; *df* = degrees of freedom, *p* = significance, CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; $\Delta\chi^2$ = change in Chi-square; ΔCFI = change in Comparative Fit Index; ΔRMSEA = change in Root Mean Square Error of Approximation. [*]The analysis was carried out without the Israeli sample due to the missing demographic data of the Israeli dataset.

3.4 Tests for Differences in Latent Factor Means

After testing the measurement invariance of the CDDQ across various groups, we also tested for the differences in the latent factor means. Before we tested the differences in latent factor means, it was important to verify the measurement invariance of the CDDQ across groups with well-fitting models. For testing the latent mean invariance of the CDDQ across gender, class, language, format, class profile, and living area groups and across time points, restrictions on latent variable means were set using male, 11th grade class, Romanian language, paper format of the questionnaire, social and humanistic science class profile, rural living are, and the first timepoint (for longitudinal) as reference value (setting the value to 0).

In the case of gender groups, results showed significant differences between the latent mean scores of the CDDQ general indecisiveness (Mean = .037, SD = 0.075, *t* = 4.909, *p* < .001); dysfunctional beliefs (Mean = 0.223, SD = 0.082, *t* = 2.726, *p* = 0.006), lack of information about occupations (Mean = 0.192, SD = 0.067, *t* = 2.870, *p* = 0.004), and about obtaining additional information scales (Mean = 0.237, SD = 0.071, *t* = 3.340, *p* = 0.001).

Female participants showed higher career indecisiveness, dysfunctional beliefs, lack of information about occupations and about obtaining additional information than male participants.

No significant differences were found between the latent mean scores of the CDDQ scales on our dataset across the two class groups (11th and 12th grade).

Regarding the Romanian and Hungarian language, the results showed significant differences between the latent mean scores and Hungarian speaking participants showed significantly higher level indecisiveness, lack of information about the process, about the self, about occupations and about ways of obtaining additional information, unreliable information, internal and external conflicts, and a lower level of dysfunctional beliefs than Romanian speaking participants. Regarding the Romanian and Hebrew language versions, the latent mean scores were significantly different and Hebrew speaking participants showed a significantly lower level of lack of motivation, dysfunctional beliefs and lack of information about the career decision-making process, about the self, about occupations, and about ways of obtaining additional information, unreliable information, internal and external conflicts than Romanian speaking participants.

Regarding the format of the CDDQ, participants who filled out the online format of the CDDQ showed significantly higher career decision-making difficulties regarding lack of motivation, indecisiveness, lack of information about the process of career decision-making, about the self, about occupations, about ways of obtaining additional information, unreliable information, internal conflicts, and external conflicts compared to participants who filled out the paper-and-pencil format of the questionnaire.

The class profile results showed that high school students with a natural science class profile showed significantly higher results on the lack of information about the process of career decision making, about the self, about occupations, about ways of obtaining additional information, unreliable information, internal conflicts, and external conflicts scales of the CDDQ compared to the students with a social and humanistic science profile.

The results for the living areas showed that participants from urban living areas showed a significantly higher level of indecisiveness, lack of information about the process, about the self, about occupations, about the ways of obtaining additional information, and internal conflicts, and lower dysfunctional beliefs than participants from rural living areas.

In the end we present results for the longitudinal analyses to test latent mean differences across time points. Participants of our dataset showed a significantly lower level of lack of information about the self and about occupations, unreliable information, and internal conflicts at the second time point of assessments than at the first time point.

4. Discussion

Results of this study confirm that the internal, hierarchical structure of the Career Decision-making Difficulties Questionnaire is effective. The measurement invariance of the CDDQ was established at scalar level across gender, high school classes, formats, class profiles, and living areas, and was partially established for languages. Longitudinal invariance was tested and supported at scalar level. Latent mean differences provide insights to the comparison of groups regarding their career decision-making difficulties. CDDQ is a sound measure of career indecision, and the latent measured constructs are not biased by responses with different psychometric properties.

Study 3.
Does it Matter If I Am a Worrier? The Effect of Worry as a Moderator between Career
Decision-Making Difficulties and Negative Dysfunctional Emotions[3]

1. Introduction

Being a teenager is challenging because most adolescents experience an increased
number of stressors – biological changes together with social transitions – as well as decisions
concerning several facets of life. In adolescence, the ability to weigh both the positive and
negative outcomes of decisions becomes increasingly developed; and hence adolescents often
experience stress and worry about their decisions' consequences. Indeed, toward the end of
the high school years, when their first major career decisions are made (e.g., transition from
high school to university or to the world of work), the probability of career decision-making
difficulties and decision-making related stress is high (Germeijs et al., 2012). Making career
decision has an impact on various aspects of adolescents' everyday lives and distress is one of
the most common outcome of career indecision. Although all high-school students face the
complex task of career decision-making, not all of them will experience emotional distress
associated with it. The current study investigated when or under what circumstances the
difficulties of career decision-making induce psychological distress.

The experienced negative dysfunctional emotions are rooted from the individual
differences in perceptions of career decision-making difficulties (Di Fabio & Palazzeschi,
2009). Mental health problems have a complex relationship with worry and career indecisions
(Lenz et al., 2010; Zunker, 2008). Although there are studies about the association between
career decision and emotional problems, it is less explored in what circumstances and
conditions this association exists. Research indicates that career indecision often contributes
to psychological distress and mental health problems (Walker & Peterson, 2012); however,
their relationship might be complex. Both ways of association are possible: negative emotions
may lead to career indecision and career indecision may lead to an individual's negative
emotions (Walker & Peterson, 2012).

In the current study the possible primary moderator of the association between career
decision difficulties and negative emotions was examined. According to the transactional
model of stress (Lazarus & Folkman, 1984) and cognitive theories about emotion formation
(e.g., Ellis, 1994), stress reactions are not direct responses to the stressors from the outside
world, but rather are influenced by the person's internal world: their cognitions about the
events. The hypothesis is that career decision-making difficulties (stressors; activating life
events) predict negative dysfunctional emotions (consequences), and this relationship is
moderated by worry (cognition).

The first goal of the present study is to examine the moderation effect of worry on the
association between career decision-making difficulties (lack of readiness, lack of
information, inconsistent information) and negative dysfunctional emotions. The second goal
of this study was to explore some factors that might also influence the primary moderation of
worry on the relationship between career decision-making difficulties and negative

dysfunctional emotions. These secondary moderators were grade, gender, and participation in a career course.

2. Method

2.1 Participants

The sample of this study consisted of 384 students from five public high schools in Romania (M_{age} = 17.9, age range 16–19) with the approval of parents and school principals. Five high schools in four different regions of Romania, two schools from urban and three from rural area were included in the study. The school psychologists chose the classes of the 11th and 12th grades where data was collected. Of the 384 students whose data were included in the analyses, 54% were girls and 46% of the participants were 11th grade and 54% were 12th grade high school students, 62% of them had participated in a career course and 38% had not.

2.2 Measures

2.2.1 Demographic questions. The adolescents reported their gender, grade, and previous attendance in a career orientation program.

2.2.2 Lack of readiness, lack of information and inconsistent information. The Career Decision-making Difficulties Questionnaire (CDDQ; Gati et al., 1996) was used to assess lack of readiness, lack of information and inconsistent information.. The internal consistency Cronbach α reliability estimate of the total score in this dataset was excellent (Cα = 0.93; N = 384). The CDDQ was translated to Romanian and was retranslated to English, then the final version of back translation was approved by the instrument's first author (Itamar Gati).

2.2.3 Worry. The Penn-State Worry Questionnaire for Children (PSWQ- C; Chorpita et al., 1997) was used to assess worry. PSWQ-C is an assessment of worry in children and adolescents, which measures the generality, intensity, and uncontrollability of worry (Păsărelu et al., 2017). The internal consistency Cronbach α reliability estimate of the total scale in this dataset was 0.80. PSWQ-C was translated to the Romanian language and then it was translated back to English (Păsărelu et al., 2017), and the back-translation was approved by the first author (B. F. Chorpita).

2.2.4 Negative dysfunctional emotions. The Profile of Emotional Distress (PED; Opris & Macavei, 2007) was used to assess negative dysfunctional emotions. PED is an instrument designed to assess functional and dysfunctional negative emotions. In this study the scale of negative dysfunctional emotions was used, which consists of 14 items and the Cronbach alpha internal consistency estimate of the scale was 0.91 in this dataset.

2.3 Procedure

The study followed the protocols approved by the Institutional Review Board of the Babes-Bolyai University. First, they received an informed consent form about the agreement of participation in the study. If the participant was younger than the age of 18, a signature was asked from the parents indicating and if the participant was older than 18, he or she was asked to sign the consent form to participate in the study. Once the consent forms were received, the participants were asked to fill out the questionnaires.

2.4 Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25 running the PROCESS Procedure for SPSS Version 3.0 (Hayes, 2018). Correlational analysis and descriptive statistics were calculated before running the moderation analyses. A bootstrapping analysis (n = 5000 bootstrap samples) was used to test the significance of the moderation, or with other words the interaction between worry, career decision-making difficulties, and negative dysfunctional emotions. Bootstrapping makes it

possible to formulate a confidence interval without the assumption that the original sample is normally distributed.

In this study, six moderation models are tested, as seen in Figs 1 and 3. The models of Fig. 1 are chosen based on the theoretical models and based on previous studies.

Figure 1. Model of the moderating role of worry on the relation between a: lack of readiness; b: lack of information; c: inconsistent information and negative dysfunctional emotions.
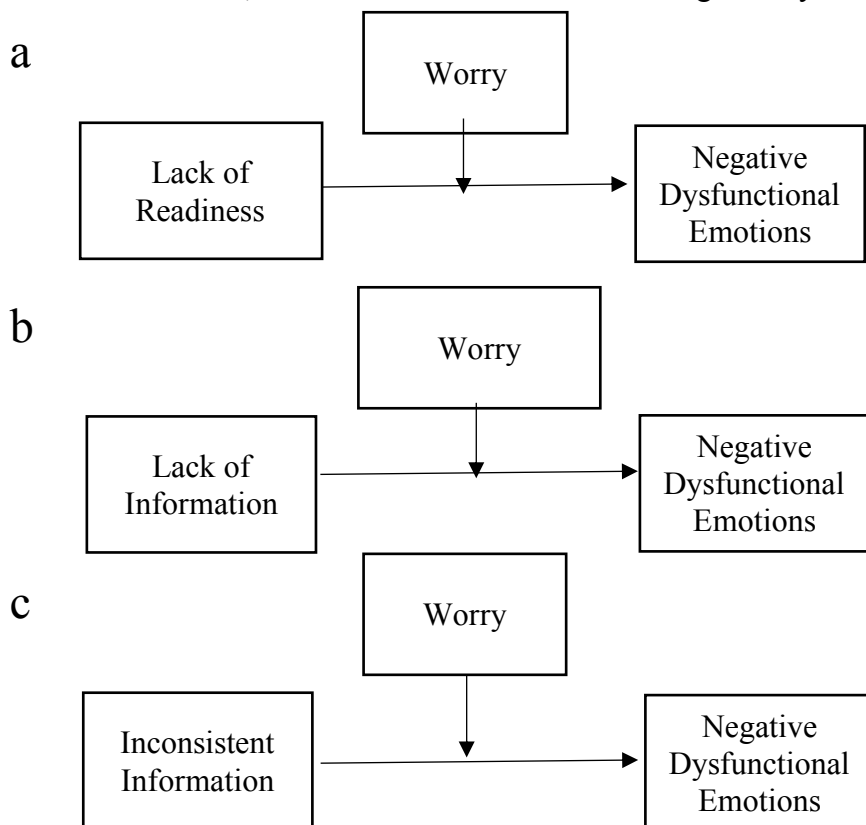

Table 1
Correlations for Variables.

	1	2	3	4	5	6	7	8
1. Lack of Readiness	-	.42**	.45**	.37**	.38**	.17**	.08	.01
2. Lack of Information		-	.82**	.40**	.30**	.13*	-.13*	.11*
3. Inconsistent Information			-	.38**	.28**	.09	-.11*	.08
4. Negative Dysfunctional Emotions				-	.51**	.21**	.04	.15*
5. Worry					-	.40**	.11*	.03
6. Gender (M=1, F=2)						-	.01	.01
7. Grade (11=1, 12=2)							-	.07
8. Career Course (Yes=1, No=0)								-
M	4.3	3.4	3.1	23.3	20.4	-	-	-
SD	1.3	2.1	1.8	9.5	9.8	-	-	-
Range	1.3–8.3	1.0–8.8	1.0–8.6	14 – 65	0 – 42	1 – 2	1 – 2	0 – 1

Note. $* p < .05, ** p < .01$

3. Results

3.1 Descriptive Statistics and Correlational Analyses

Descriptive statistics and zero-order Pearson correlations are presented in Table 1. Correlations are calculated between the variables of the proposed model. As can be seen in Table 1, career decision-making difficulties, worry, and negative dysfunctional emotions are significantly and positively correlated with one another.
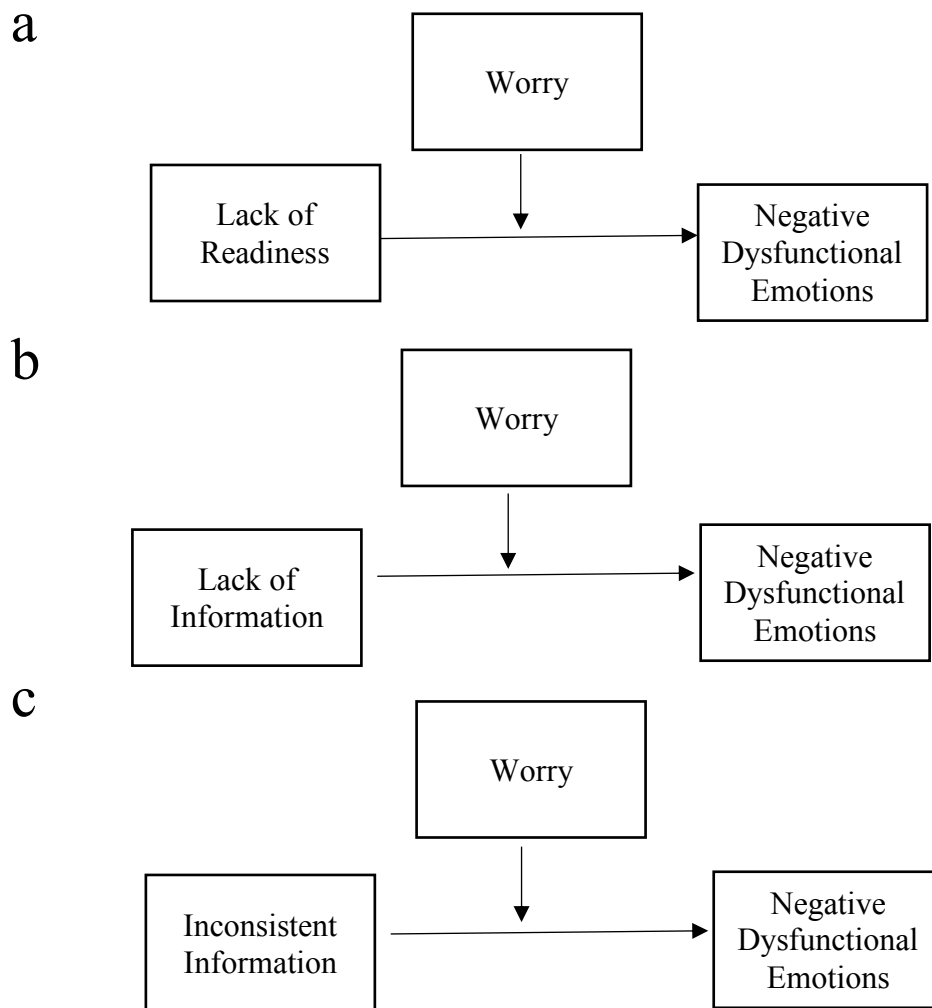
3.2 Testing Moderation Models

3.2.1 Worry as a moderator between lack of readiness and negative dysfunctional emotions. First, the moderation effect of worry on the relation between lack of readiness and negative dysfunctional emotions (Fig. 1a) is tested. The overall model significantly predicts negative dysfunctional emotions with a significant interaction between worry and lack of readiness. Thus, the effect of lack of readiness on negative dysfunctional emotions depends on the level of worry. The examination of Fig. 2a shows that for a medium level of worry, every unit of the lack of readiness scale leads to a 1.44 points increase on the negative dysfunctional emotions scale, and for a high level of worry, every unit of the lack of readiness scale increases results in 2.44 points on the negative dysfunctional emotions scale.

In order to explore that this interaction between lack of readiness and negative dysfunctional emotions is uniquely moderated by worry, or some other factors influence this primary moderation, gender, grade and participation in a career course are added as secondary moderators (Fig. 3a). The effect of lack of readiness on negative dysfunctional emotions does not depend on gender or on participation in a career course. In terms of grade, both the overall model and the interaction is significant, thus, the effect of lack of readiness on negative dysfunctional emotions depends on the level of worry and in which grade the student is. The conditional effects (simple slopes) of lack of readiness at the different values of the moderators (worry, grade) show that for the 12th graders, when the worry level is medium, or high, lack of readiness does significantly predict negative dysfunctional emotions.

3.2.2 Worry as a moderator between lack of information and negative dysfunctional emotions. Next, the moderation effect of worry on the relationship between lack of information and negative dysfunctional emotions (Fig. 1b) is tested. The overall model significantly predicts negative dysfunctional emotions, with a significant interaction between worry and lack of information. The effect of lack of information on negative dysfunctional emotions depends on worry. As can be seen on Fig. 2b, for a medium level of worry every unit of the lack of information scale increases the negative dysfunctional emotions scale with 0.93 points, and for a high level of worry every unit of the lack of information scale leads to a 1.84 points increase on the negative dysfunctional emotions scale. Then the secondary moderators (gender, grade, and participation in a career course) are added to the model (Fig. 3b) with the purpose of exploring their effect on the interaction between lack of information and negative dysfunctional emotions moderated by worry, and the results show that the effect of lack of information on negative dysfunctional emotions does not depend on grade, gender, or participation in a career course.

Figure 1. Model of the moderating role of worry on the relation between a: lack of readiness; b: lack of information; c: inconsistent information and negative dysfunctional emotions.

a

```
              ┌──────────────┐
              │    Worry     │
              └──────┬───────┘
                     │
                     ▼
┌──────────────┐         ┌──────────────┐
│   Lack of    │────────▶│   Negative   │
│  Readiness   │         │ Dysfunctional│
└──────────────┘         │   Emotions   │
                         └──────────────┘
```

b

```
              ┌──────────────┐
              │    Worry     │
              └──────┬───────┘
                     │
                     ▼
┌──────────────┐         ┌──────────────┐
│   Lack of    │────────▶│   Negative   │
│ Information  │         │ Dysfunctional│
└──────────────┘         │   Emotions   │
                         └──────────────┘
```

c

```
              ┌──────────────┐
              │    Worry     │
              └──────┬───────┘
                     │
                     ▼
┌──────────────┐         ┌──────────────┐
│ Inconsistent │────────▶│   Negative   │
│ Information  │         │ Dysfunctional│
└──────────────┘         │   Emotions   │
                         └──────────────┘
```

3.2.3 Worry as a moderator between inconsistent information and negative dysfunctional emotions. Third, the moderation effect of worry on the relationship between inconsistent information and negative dysfunctional emotions (Fig. 1c) is tested. The overall model significantly predicts negative dysfunctional emotions, with a significant interaction between worry and inconsistent information,. The effect of inconsistent information on negative dysfunctional emotions depends on the level of worry. Fig. 2c shows that for a medium level of worry every unit of inconsistent information scale leads to a 1.03 points increase on the scale of negative dysfunctional emotions, and for a high level of worry, every unit of inconsistent information scale increases the negative dysfunctional emotions scale with 2.15 points. The effect of inconsistent information on negative dysfunctional emotions does not depend on gender, grade, or participation in a career course.

Figure 2. Moderating effect of Worry on Career decision-making difficulties by Negative Dysfunctional Emotions. Lack of Readiness, Lack of Information, Inconsistent Information.
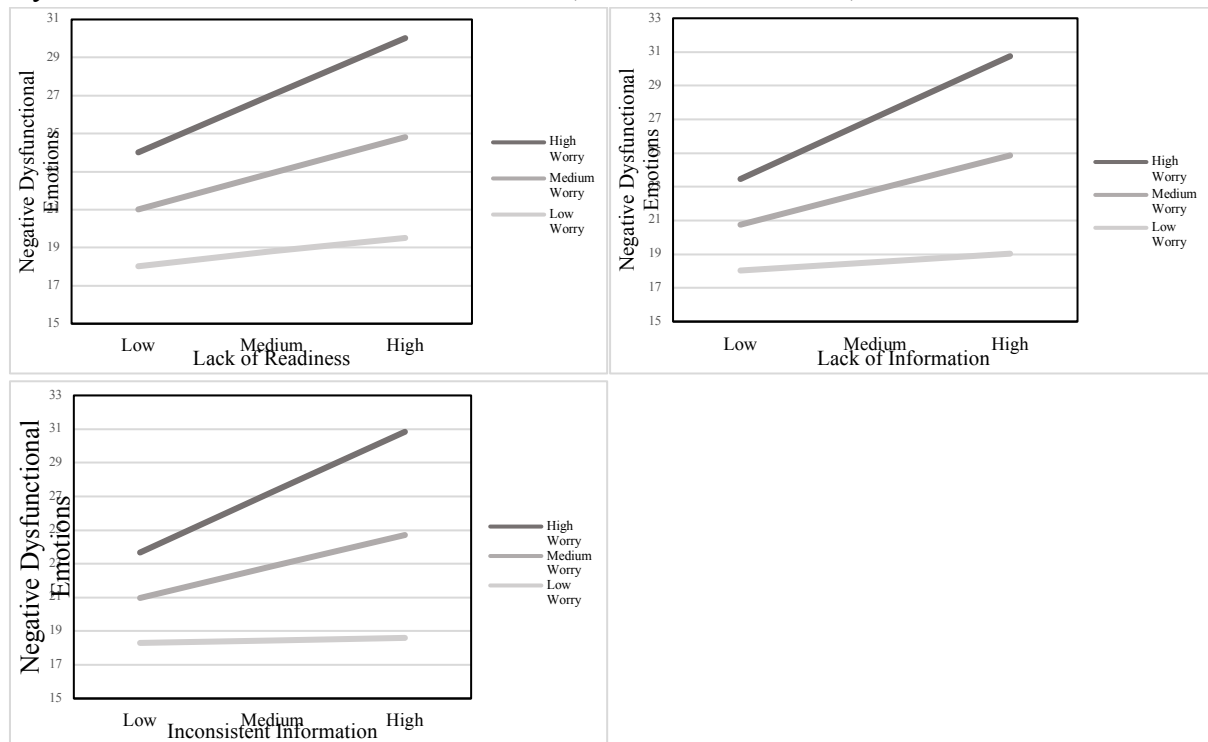

4. Discussion

Career decision-making in adolescence can be challenging and stress-provoking. Although previous studies examined the associations between career decision-making difficulties, less was known about when this association exists. This study addressed this problem by using emotion formation theory (Ellis, 1994) and stress appraisal theory (Lazarus & Folkman, 1984) and applied a moderation analysis with career decision-making difficulties as predictors, negative dysfunctional emotions as outcomes and worry as a moderator. Based on the results, high school students' career decision-making difficulties interact with worry and lead to increased negative dysfunctional emotions. All three career decision-making difficulties increased negative dysfunctional emotions at medium and high level of worry but not at low level of worry.

Gender and participation in a career course did not have an additional moderation effect over and above the moderation effect of worry. Grade as a secondary moderator had an additional enhancing effect over the moderation effect of worry for lack of readiness, but not for lack of information and inconsistent information. The results can help to better understand under what kind of circumstances career decision difficulties work as activating life events (stressors) leading to negative emotions. The findings about increasing levels of worry and negative dysfunctional emotions in the last two years of high school can also help us to better understand the associations between the students' challenges in career decision-making and the specific Eastern-European education and workforce situation. Career decision-making difficulties only lead to psychological distress when an adolescent has a medium or high level of dysfunctional cognitions.

Figure 3. Model of the secondary moderators' (gender, grade, career course) effect on the moderating role of worry on the relation between lack of readiness; lack of information; inconsistent and negative dysfunctional emotions.

a

Worry

Gender
Grade
Career Course

Lack of Readiness

Negative Dysfunctional Emotions

b

Worry

Gender
Grade
Career Course

Lack of Information

Negative Dysfunctional Emotions

c

Worry

Gender
Grade
Career Course

Inconsistent Information

Negative Dysfunctional Emotions
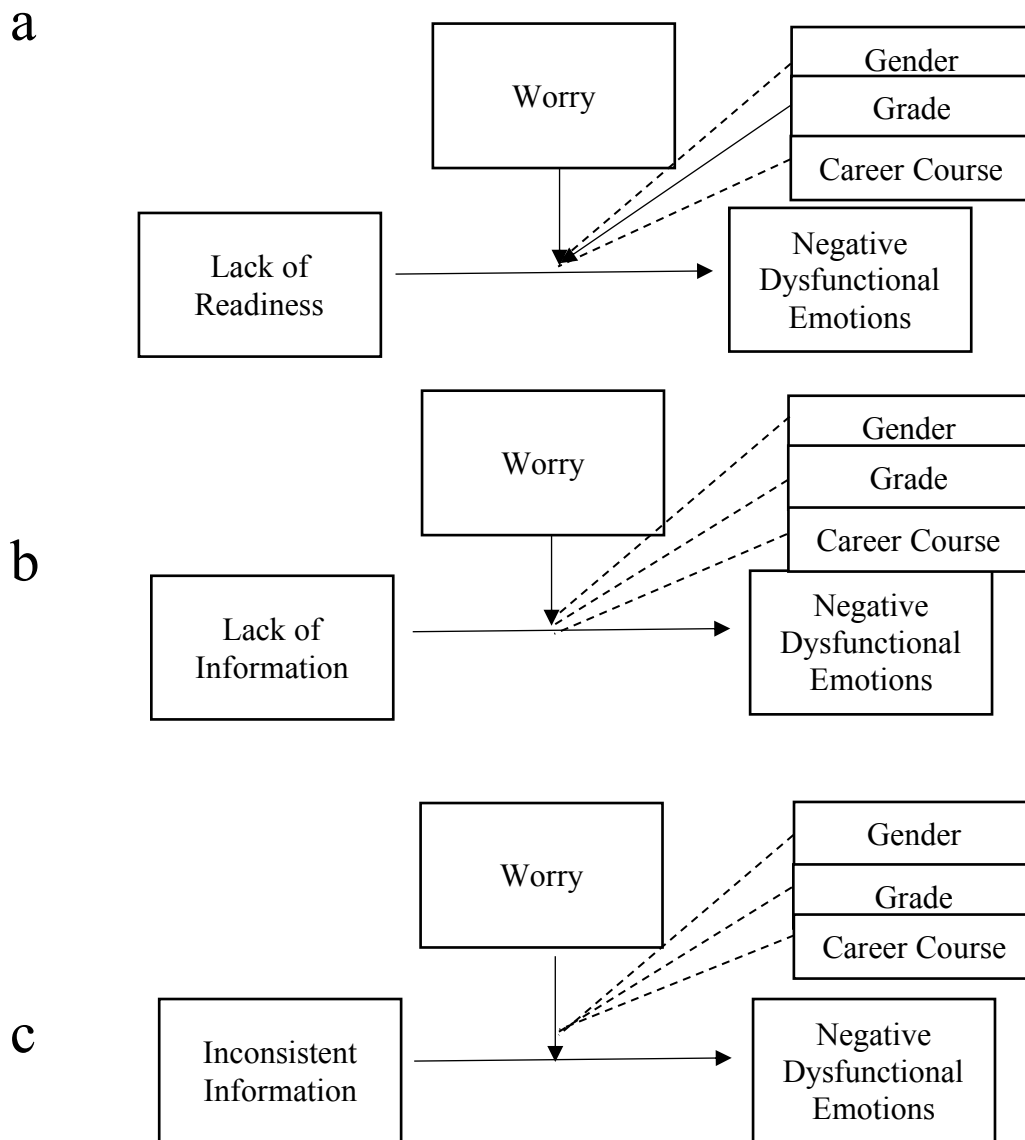
Study 4.

Rational-Emotive Behavior Therapy Intervention for Career Decision-Making Difficulties and Negative Dysfunctional Emotions with High-School Students, a Randomized Trial[4]

1. **Introduction**

Career decision-making difficulties that adolescents and young adults face has increased in the previous decades. Educational programs (e.g., NCDA Career Development Trainings, McWhirter, Crothers, & Rasheed, 2000) and different intervention methods (e.g., Life design-based career intervention; Nota, Santilli, & Soresi, 2016) are intended to help high-school students, who make their first career decisions, to cope with various challenges and difficulties in the career decision-making process. However, most of the career courses do not target negative emotions and distress which arise during the career decision-making process, but rather focus on reducing the participants career decision-making difficulties, increasing career decision-making self-efficacy (Lam & Santos, 2018), developing career maturity and self-concept (Lau, Chung, & Wang, 2019), or emphasizing identity development (Brown & Bimrose, 2015). Additionally, many career interventions related to the education system lack theoretical basis (Prideaux, Creed, Muller, & Patton, 2000). The majority of studies about career interventions are conducted in the US or in Western Europe, and less is known about the same programs in Eastern Europe. Therefore, we decided to develop a novel career course program, which targets both the career decision-making process and emotional distress based on the theory of Rational-Emotive Behavioral Therapy (REBT; Ellis, 1962).

The revolution of cognitive approaches (Cognitive Behavioral Therapy; CBT; Beck, 1976; REBT; Ellis, 1962) had an influence on vocational psychology, and on the methods of career counseling. In vocational psychology the cognitive information processing (CIP; Sampson et al., 2004) approach was proposed based on the cognitive behavioral theories which underline how important addressing emotions, thoughts, and behaviors is (Peterson, Sampson, & Reardon, 1991), and emotional distress in particular in the early stage of the career decision-making process (Bullock-Yowell, Peterson, Reardon, Leierer, & Reed, 2011). Later, the Social-Cognitive Career Theory (Lent, Brown, & Hackett, 2002) was introduced which stem from the cognitive and motivational processes in the development of career interests, in career decision-making, and in obtaining career success. Moreover, assessments were created (e.g., Career Thoughts Inventory; Sampson & Peterson, 1996; Dysfunctional Career Beliefs; Hechtlinger, Levin, & Gati, 2019) based on the cognitive therapy theoretical approach (Beck, 1976), and these instruments serve as great resources for career intervention programs. Then, several studies assessed the efficiency of career intervention programs

applying REBT methods (Kovalski & Horan, 1999; Mahfar, Aslan, Noah, Ahmad, & Jaafar, 2014; Mitchell & Krumboltz,1987; Ogbuanya et al., 2018a, b)

The present study's objective is to investigate whether the efficacy of an REBT enhanced career course intervention program is superior to regular career course intervention. We hypothesize that our REBT enhanced intervention is more efficacious than a regular type of intervention in reducing career decision-making difficulties. Consistent with the evidence-based approach, we designed an intervention which is based on a scientific theory, and we also tested the intervention's efficacy compared to an active intervention. Our primary outcome is the individual's level of career decision-making difficulty. Our secondary outcomes are the individual's experienced distress, worry, irrational beliefs, and life satisfaction as a positive secondary outcome.

2.   Method

2.1 Study design and procedure

The study was registered on clinicaltrials.gov (Identifier Nr. NCT03807895). The study was approved by the Babes-Bolyai Ethics Committee (Registration Nr. 19.175/24.10.2018) and by the school principals. The intervention was conducted in 11th grade high school classes in two cities in Romania. After we had the consent forms of each participant we started the career intervention program implemented in a school setting.

The study design is a parallel group randomized trial, with a randomization by classes. The intervention had two arms, one was a regular career course, while the other was the same course with additional REBT techniques included. The intervention was delivered in groups in six weekly sessions of 50 minutes per each session for both groups. Each of the six modules focused on a different component with homework between sessions. Adolescents completed assessments at three points within the timespan of the treatment: T1 (baseline, before the first session), T2 (post-intervention, after the last session), and T3 (at a six-month follow-up).

2.2 Participants

In total 209 students participated in the study (62% female, age $M = 17.13$; $SD = 0.4$) out of the 235 students from which we selected those students who indicated on the Range of Considered Alternatives scale (Gati, Kleiman, Saka, & Zakai, 2003) that they are completely undecided or somewhat undecided about their career. One hundred twenty-two students (58.4 %) participated in an REBT enhanced career course, while 87 students (41.6%) in a regular career intervention. Eligibility criteria for the study included: (a) indication of undecidedness (results of 1-5 on the RCA scale); (b) not currently receiving any other forms of career intervention or psychological treatment; (c) attending high school; and (d) are from the 11th grade. All participants were 11th grade students from two public high-schools of Romania, and in both schools, classes were randomized into REBT enhanced and regular career intervention groups.

2.3 Interventions

2.3.1 Regular career counseling. The career course was inspired by Gati, et al. (2013) and each session aimed a different component. The first session was about introducing the program of the career intervention, building the therapeutic relationship and a short psychoeducation about unconditional self-acceptance. The second session was about

facilitating the self-exploration of the students, and helping them to discover their talents, values, interests and desired life style. The third session's topic was information about the world of work and steps of career decision-making. The fourth session focused on problem solving, discussing where to find help and enhancing the students' confidence in resolving problems. The fifth session was about setting realistic goals, planning, and increasing their self-esteem and self-trust. The sixth session was about summarizing the career course, deciding on the career choice and make a tentative plan on how to reach it.

  2.3.2 REBT enhanced career course. The REBT enhanced career intervention was the same career intervention enhanced with REBT techniques. The first three sessions were the same; the first session was an introduction, the second session covered information about the self, and third session covered information about the career decision-making process. The fourth session was about teaching the ABC model and the relationship between irrational beliefs and emotions. In the fifth session, participants learned about cognitive restructuring, exposure/behavioral activation, and emotional problem solving (stress model). The sixth session provided a summary of the REBT techniques, covered planning, and also encouraged the participants to maintain the gaining.

2.4 Measures

  2.4.1 Demographic information. In the beginning of the assessment we asked some demographic information about their gender, grade, parents' education, and if they have already participated in a career orientation program.

  2.4.2 Selection criterium. *Range of Considered Alternatives* (RCA; Gati, Kleiman, Saka, & Zakai, 2003) assesses the status of the individual in the career decision-making process in terms of the range of career alternatives the individual considers at a given moment. The individual is asked to select the statement that best describes him or her from a list between: (1) *I do not even have a general direction;* and (6) *I am already sure of the occupation I will choose.*

  2.4.3 Primary outcome measure. The *Career Decision-making Difficulties Questionnaire* (CDDQ; Gati et al., 1996) identifies the causes of the difficulties individuals face when making a career decision. The internal consistency Cronbach α reliability estimate of the total scale in our dataset is .92.

  2.4.4 Secondary outcome measures. The *Penn-State Worry Questionnaire for Children* (PSWQ-C; Chorpita, Tracey, Brown, Collica, & Barlow, 1997) is an adaptation of the Penn-State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990), an assessment of worry in children and adolescents, which measures the generality, intensity, and uncontrollability of worry. The internal consistency Cronbach α reliability estimate of the total scale in our dataset is adequate .76.

  Profile of Emotional Distress (PED; Opris & Macavei, 2007) is an instrument designed to assess functional and dysfunctional negative emotions. The PED can provide a total score of general distress and three major scale scores (*positive emotions, negative functional emotions, negative dysfunctional emotions*). The Cronbach alpha internal consistency estimate of the PDA is .87 in our dataset.

General Attitudes and Belies Scale-Short Version (GABS-SV; Lindner, Kirkby, Wertheim, & Birch, 1999) measures the irrational beliefs of the individual, based on the REBT theory of Ellis (1962). Cronbach alpha of the GABS in our dataset is .81.

2.4.5 Positive outcome. The *Multidimensional Life Satisfaction Scale* (MLSS; Seligson, Huebner, & Valois, 2003) measures the satisfaction of students in five areas of their life (school, family, friends, one's self, environment). The total score is the sum of the response of each item. Cronbach alpha in our dataset is .73.

2.5 Statistical Analyses

Group differences in demographics and in the interest variables are tested at baseline using *t*-test and Chi-square test. Changes in the outcome measures were evaluated using repeated measures ANOVA (between pre-, post-test and follow-up). For effect sizes we used the multivariate partial η^2 (small effect size $\eta^2 = .01$, medium effect size $\eta^2 = .06$, large effect size $\eta^2 = .14$, Cohen, 1988) and for comparing within- and between-group effect sizes Cohen's *d* was calculated. For those outcomes in which cases demonstrating significant differences were found in the baseline, we applied ANCOVA analyses. Mauchly's test was used to test sphericity, and if sphericity was violated, results within subjects were corrected with Greenhouse-Geiser formula. Bonferroni procedure was used for post-hoc test. 95% confidence intervals were used to estimate the precision of the effect size for all measures. All analyses were performed with SPSS version 26.0 (SPSS Inc., Chicago, IL).

3.   Results

3.1 Baseline Analyses

We tested the differences in demographics and in our primary and secondary outcomes between the two intervention groups (regular and REBT enhanced). No differences emerged in their age, career decision status, career decision-making difficulties, worry, and their irrational beliefs. However, significant differences emerged in gender ($\chi^2 [1, 234] = 4.49$; $p = 0.040$), in emotional distress ($t [204] = 2.66$; $p = .010$), in negative dysfunctional emotions ($t [204] = 3.19$; $p = .010$), and in life satisfaction ($t [204] = -2.18$; $p = .030$).

3.2 Hypothesis Testing

Based on the hypothesis, the REBT enhanced career intervention will show superiority with a greater decrease in career decision-making difficulties, emotional distress, negative dysfunctional emotions and irrational beliefs, compared to the students who participated in the regular career course post-treatment and at the six-month follow-up. Means, standard deviations and effect sizes are presented in Table 1.

3.2.1 Primary outcome. For career decision-making difficulties the results of RM ANOVA 2*3 indicates a significant effect of Time, Wilks' Lambda= .82, $F (2, 128) = 15.22$, $p < .001$, $\eta^2 = .11$. However, neither the Group main effect, $F (2, 128) = .48$, $p = .491$, $\eta^2 = .004$, nor the Time*Group main effect were significant, Wilks' Lambda= .98, $F (2, 128) = 1.61$, $p = .200$, $\eta^2 = .01$. The Bonferroni test reveals that, regarding time, there is a significant difference between T1 and T2 ($p = .003$), between T1 and T3 ($p < .001$), with no significant difference between T2 and T3 ($p = .082$). For the REBT enhanced career course group there is

a significant difference between T1 and T2 ($p = .005$), T1 and T3 ($p < .001$), but not between T2 and T3 ($p = .090$). See results presented in Figure 1a.

Figures 1 a-f. Graphic representations of the interest variables, before, after, and 6-month follow-up the intervention, for the REBT enhanced and regular career intervention group.
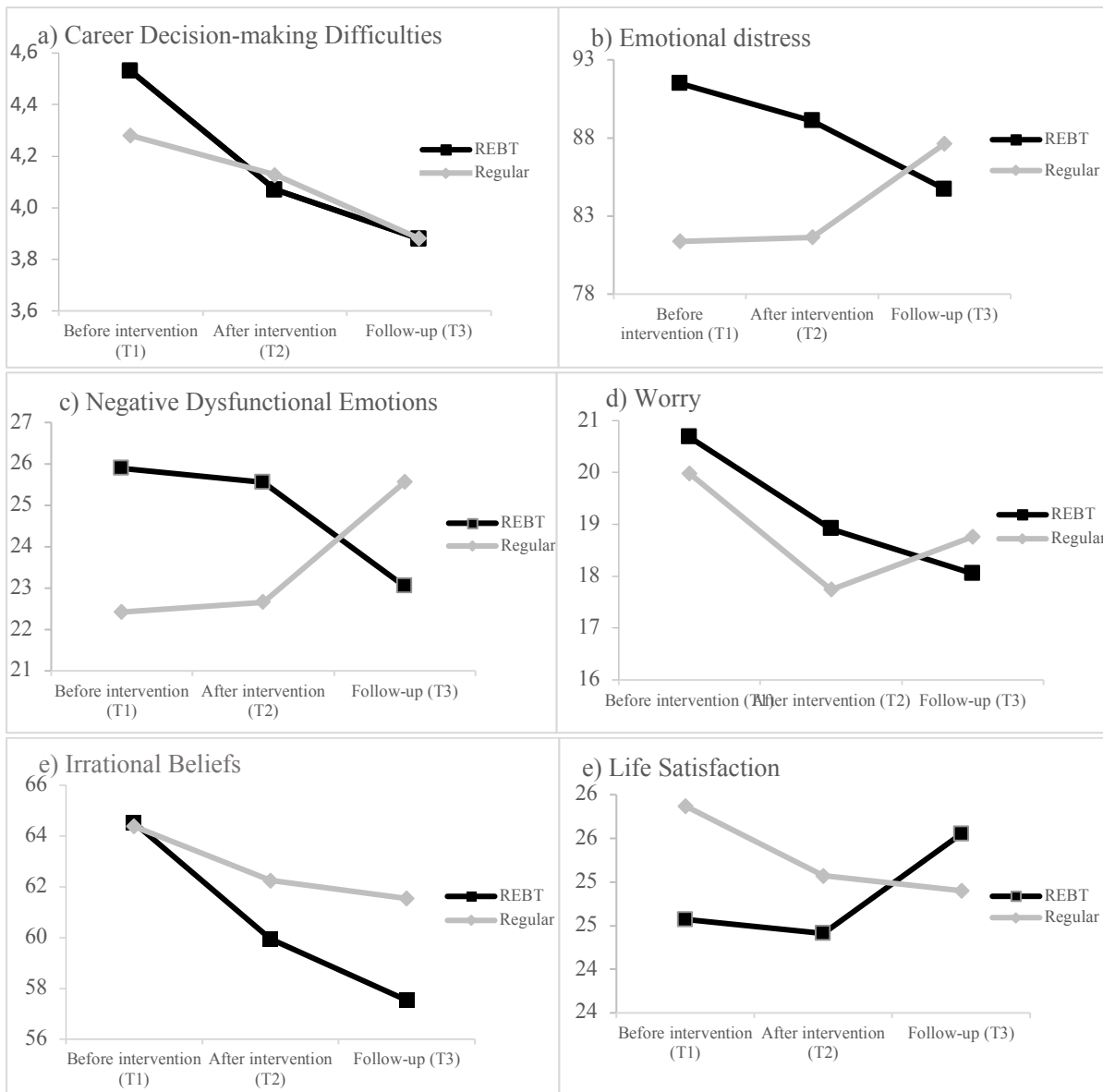
3.2.2 Secondary outcomes.

3.2.2.1 Emotional distress. For emotional distress, one-way ANCOVA was conducted to determine statistically significant differences in time on emotional distress controlling for pre-intervention scores and group as a fixed factor. Results of univariate ANCOVA on post-intervention emotional distress, controlling for pre-intervention scores revealed that there is no significant difference between the scores in the REBT enhanced and regular intervention group, $F(1, 165) = .23$, $p = .631$, $\eta^2 = .001$. However, the REBT enhanced career intervention group displayed significantly lower follow-up scores compared to the regular intervention

group scores (Figure 1b), F (1, 150) = 4.82, p = .030, η^2 = .032 (mean scores are presented in Table 1).

3.2.2.2 Negative dysfunctional emotions. We also applied ANCOVA for analyzing negative dysfunctional emotions because of the significantly different baseline scores on this scale. Results of univariate ANCOVA on post-intervention negative dysfunctional emotions and controlling for pre-intervention scores revealed that there is no significant difference between the scores in the REBT enhanced career course and regular intervention group, F (1, 165) = .58, p = .45, η^2 = .004. However, the REBT enhanced career intervention group displayed significantly lower follow-up scores compared to the regular intervention group scores, F (1, 150) = 8.02, p = .005, η^2 = .051 (see also in Figure 1c and Table 1).

3.2.2.3 Worry. The time main effect shows that the values of worry significantly differ from each other at the three time points, Wilks' Lambda = .89, F (2, 131) = 7.57, p = .001, η^2 = .11. On the other hand, neither the group main effect, F (2, 131) = .04, p = .84, η^2 = .001, nor the Time*Group main effect on worry were not significant, Wilks' Lambda = .98, F (2, 131) = 1.69, p = .190, η^2 = .01. Bonferroni showed that, regarding Time, there is a significant difference between T1 and T2 (p = .001), and between T1 and T3 (p = .005), but not between T2 and T3 (p =1.00). For the REBT enhanced career course group, there is a significant difference between T1 and T2 (p = .004) and between T1 and T3 (p = .001), but not for T2 and T3 (p = .240). Figure 1d shows that worry decreases in both groups post-intervention, however at follow-up, it increases in the regular intervention group, while it keeps decreasing in the REBT enhanced group.

3.2.2.4 Mechanism of change – irrational beliefs. Time main effect shows that generally, independent from the condition, the values of irrational beliefs significantly differ from each other at the three time points, Wilks' Lambda = .79, F (2, 121) = 17.09, p < .001, η^2 = .12. The group main effect is not significant, F (2, 121) = 1.23, p = .27, η^2 =. 005. However, the Time*Group main effect on irrational beliefs is significant, Wilks' Lambda = .94, F (2, 121) = 3.98, p = .02, η^2 = .03. The Bonferroni results relating to time show that there is a significant difference between T1 and T2 (p < .001), and T1 and T3 (p < .001), but not between T2 and T3 (p = .42). Figure 1e shows that irrational beliefs decrease in both groups but decrease more in the REBT enhanced career course group post-treatment and at follow-up.

3.2.2.5 Positive outcomes – life satisfaction. For life satisfaction, one-way ANCOVA was conducted to determine statistically significant differences in time on life satisfaction controlling for pre-intervention scores and group as a fixed factor. Results of univariate ANCOVA on post-intervention life satisfaction and controlling for pre-intervention scores revealed that there is no significant difference between the scores in the REBT enhanced career course and regular intervention group, F (1, 165) = .18, p = .671, η^2 = .001. However, the REBT enhanced career intervention group displayed higher follow-up scores compared to the regular intervention group scores, F (1, 150) = 3.38, p = .068, η^2 = .022 (mean scores are presented in Table 1). Results are also displayed in Figure 1f.

Table 1

Results of the two groups before and after the intervention.

Measure	Scale	Pre-intervention assessment Mean (SD)		Post-intervention assessment Mean (SD)		Follow-up assessment Mean (SD)		Pre to post within group ES (95% CI)		Post-intervention between group ES (95% CI)	Pre to follow-up within group ES (95% CI)	
		REBT	Regular	REBT	Regular	REBT	Regular				REBT	Regular
CDDQ	Total Cdd	4.43 (1.29)	4.24 (1.31)	4.04 (1.42)	4.13 (1.30)	3.79 (1.38)	3.88 (1.32)	-0.29 (-0.56 to -0.01)	-0.08 (-0.39 to 0.23)	0.06 (-0.24 to 0.37)	-0.48 (-0.77 to -0.20)	-0.27 (-0.77 to 0.16)
PDA	Total	91.49 (22.57)	81.37 (22.21)	89.10 (27.41)	81.63 (21.98)	84.73 (25.59)	87.62 (24.44)	-0.09 (-0.30 to 0.33)	0.08 (-0.18 to 0.35)	-0.30 (-0.61 to 0.01)	-0.28 (-0.57 to -0.01)	0.27 (0.05 to 0.59)
PDA	Neg. dysf.	25.89 (9.33)	22.42 (8.99)	25.55 (11.01)	22.66 (8.39)	23.04 (9.49)	25.56 (11.31)	-0.03 (-0.29 to 0.34)	0.14 (-0.12 to 0.40)	-0.29 (-0.60 to 0.02)	-0.30 (-0.59 to -0.02)	0.31 (-0.01 to 0.63)
PSWQ-C	Worry	20.98 (9.20)	19.89 (9.55)	18.86 (9.77)	17.44 (9.41)	18.05 (9.87)	18.77 (9.28)	-0.22 (-0.49 to 0.05)	-0.26 (-0.57 to 0.05)	-0.15 (-0.45 to 0.16)	-0.31 (-0.59 to -0.03)	-0.12 (-0.43 to 0.19)
GABS	Total IBs	64.53 (11.07)	63.96 (9.93)	59.68 (12.22)	61.63 (11.30)	57.54 (13.42)	61.37 (10.84)	-0.42 (-0.69 to -0.15)	-0.22 (-0.54 to 0.09)	0.17 (-0.14 to 0.47)	-0.58 (-0.87 to -0.29)	-0.25 (-0.57 to 0.07)
MLSS	Life satisfaction	24.57 (4.08)	25.87 (4.36)	24.41 (4.82)	25.07 (4.51)	25.55 (4.70)	24.90 (5.78)	-0.18 (-0.50 to 0.13)	-0.19 (-0.50 to 0.07)	-0.14 (-0.17 to 0.45)	0.23 (-0.06 to 0.51)	-0.19 (-0.51 to 0.12s)

Discussion

In conclusion, the results of the current study show that the combination of an REBT enhanced career course with regular career course elements, can help students to decrease their career decision-making difficulties, irrational beliefs and negative dysfunctional emotions for up to six months after the intervention. Especially for career decision-making difficulties and irrational beliefs we found medium effect sizes between pre- to follow-up within the REBT enhanced career intervention group. Small post-intervention effect sizes were observed between the REBT enhanced and the regular career intervention groups. These results support that the presented intervention is effective and can help students effectively reduce career decision-making difficulties and irrational cognitions. This type of method also represents an ecological mode to deliver intervention to a large number of high school students, because of its group-based nature. In the modern world where jobs are appearing and disappearing rapidly, career interventions like this can help high school students to make better career decisions, and in the meantime learn how to reduce the distress and dysfunctional cognitions accompanying the process of career decision-making.

Figure 2. Flow diagram of the randomization of the participants.
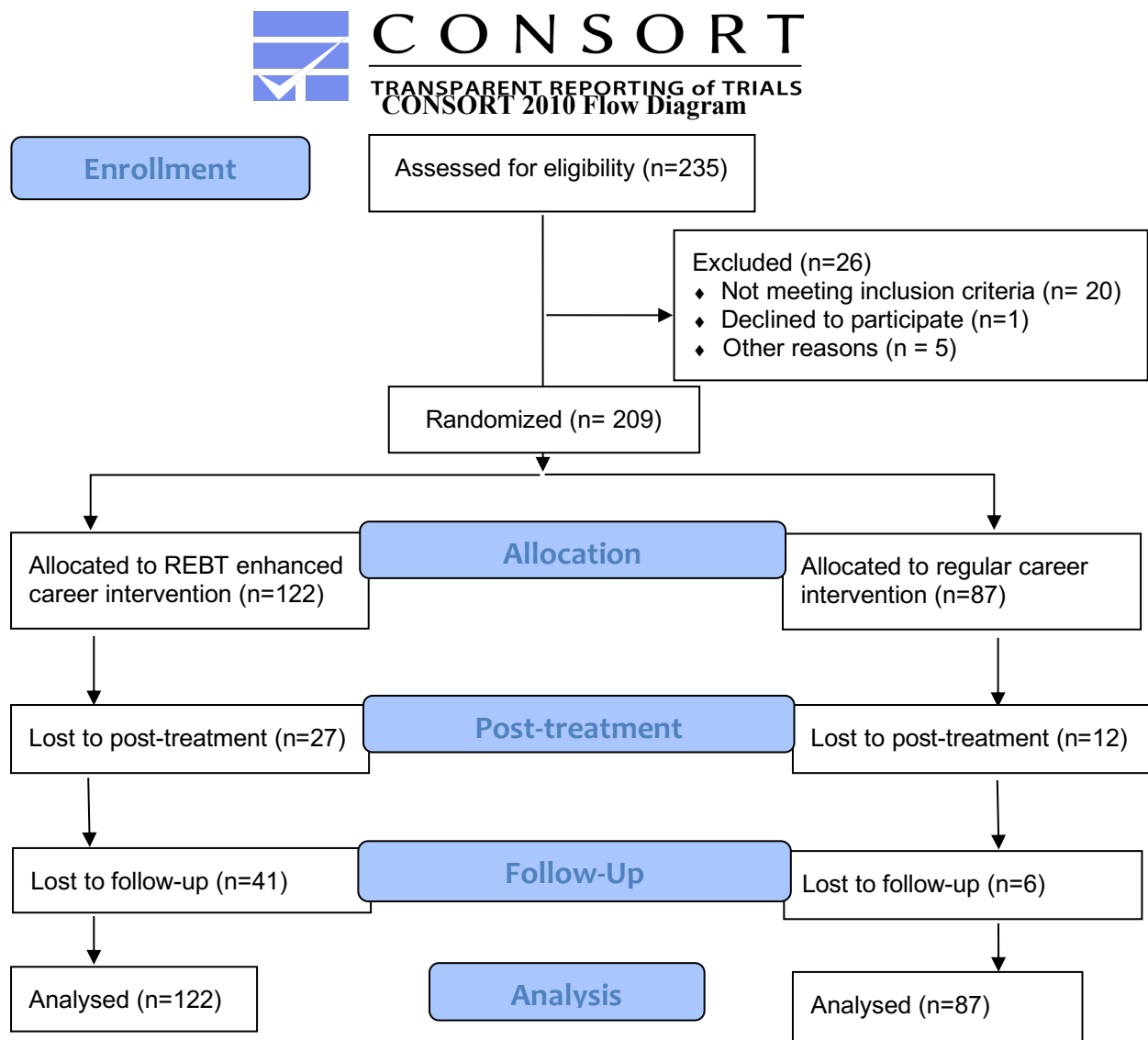
CHAPTER IV. GENERAL CONCLUSIONS AND IMPLICATIONS

The general goal of this thesis was to investigate the associations between career decision-making difficulties and negative dysfunctional emotions and to implement evidence-based principles in assessments and career interventions which address the problem of career indecision and emotional distress. In the 21st century there is a high level of uncertainty on the job market, therefore, there is an increasing chance that one experiences emotional distress during the process of career decision-making. If counselors would like to help their clients to make better career decisions, they need evidence-based assessments and theory-based, scalable and efficient intervention methods.

Some of the well-known career indecision assessments do not have theoretical basis (Tinsley, 1992), or their psychometric properties do not reach the minimum criteria of evidence-based assessments (Hunsley & Mash, 2008). The evaluation of the existing career decision-making assessments and a classification of them help researchers and career counselors to select the best assessments for their work. Another important issue is to examine the assessments' measurement invariance, to determine whether the same construct is being measured across specific groups and across time points. Next, the possible moderating factors also need to be examined in reference to the association between career decision-making difficulties and negative dysfunctional emotions. Then, those who experience career decision-making difficulties and emotional distress would need short, efficient and evidence-based career interventions. REBT interventions can be a solution, based on their well-structured and logical method (Dryden, 2012), their proven efficacious characteristics (e.g., Engels et al., 1993), and the fact that a small number of sessions (6-8) are effective in reducing emotional difficulties (Forde et al., 2005).

In order to investigate the career decision-making assessments, in the first study we compiled the existing measures and classified them into distinct categories and subcategories, based on the theory they were derived from, the constructs they measure, the purpose of the assessment and the similarity of the scales. As a result, we managed to create a theoretical framework for the classification of the assessments, and we also evaluated the included measures' applicability and psychometric properties based on the evidence-based approach for assessments (Hunsley & Mash, 2008). Next, in Study 2 we analyzed the measurement invariance of the Career Decision-making Difficulties Questionnaire (CDDQ; Gati, Krausz, & Osipow, 1996), one of the most well-known career decision-making assessments. We measured the CDDQ's measurement invariance across gender, class, languages, formats, class profiles, living areas and also its longitudinal invariance. Then, in the third study we investigated the associations between career indecision and emotional distress. Based on the REBT theory we found that worry as a cognition moderates the relationship between career decision-making difficulties (*lack of readiness, lack of information, inconsistent information*) and negative dysfunctional emotions. In the fourth study we aimed to create an REBT enhanced career intervention program for high-school students and assess its superior efficiency in reducing career decision-making difficulties, emotional distress (negative dysfunctional emotions), worry, and irrational beliefs, and increase life satisfaction compared to a regular career intervention program.

4.1 THEORETICAL AND METHODOLOGICAL ADVANCES

The research of this thesis has the following theoretical contributions:

1.   Proposing a theoretically-based classification for the diverse career decision-making assessments (Study 1). This classification fulfills a need in the literature and helps in clarifying when and for what kinds of problems the assessments can be used. There are three possible ways in which order the assessments can be applied based on the classification. First, to assess the antecedents, next effects on the process and then effects on the decision. Second, to do it in a reverse order, starting with measuring the career decision status of the individual (effects on the decision), then to find out why one feels undecided or indecisive (antecedents). Third, to start with a more heterogeneous assessment, and then locate specific difficulties with a more homogeneous assessment.

2.   The analysis of the assessments' psychometric properties and their applicability based on an evidence-based approach (Study 1), a practice which is common in clinical psychology, but rare in vocational psychology. The comprehensive information about the compiled assessments provides an overview of the psychometrically sound measures, and also highlights those which still need some improvement. The way in which the assessments were detected and compiled, how the classification was made, and how we used experts in the career decision-making field to check that our classification was correct are also contributions to the literature.

3.   Examining the internal structure of the Career Decision-making Difficulties Questionnaire (Study 2) by testing its factorial structure and establishing measurement invariance across gender, classes, languages, formats, class profiles and longitudinal invariance. By establishing measurement invariance, we supported the CDDQ's construct validity. We also proved that the differences across gender, language, format, living area groups, high school classes with different profiles are not determined by the errors in measurement. Moreover, establishing longitudinal invariance provided evidence for the equality of factor structure for the CDDQ across time.

4.   Understanding better when, and under what circumstances, career decision-making difficulties as activating life events lead to negative dysfunctional emotions (Study 3). This study established the moderating role of worry and provided evidence for its increasing effect on negative dysfunctional emotions. These results help to better understand the associations between career indecision and emotional distress, which is not established yet neither theoretically, nor experimentally. The methodological approach is in line with the modern scientific approach, reflecting a shift from examining if two variables are associated (causally or otherwise) to explore *how* and *when,* or *under what circumstances* the variables are related.

5.   The methods of rational-emotive behavior therapy can be implemented into a career course, and an REBT enhanced career intervention is an efficient method for reducing career indecision. Study 4 demonstrates advances from a methodological perspective as well. First, it is an intervention that is based on a scientific theory, which increases the efficiency of the method. Second, it is a systematic method, with logical and well-constructed modules which target specific career decision-making and emotional difficulties. Third, it is a short, but at the same time efficient and effective method, which facilitates easy implementation in school settings. Fourth, it is group-based which enables the delivery of the career intervention to a large group of high-school students.

4.2 PRACTICAL/CLINICAL ADVANCES

Study 1 provides a classification of career decision-making assessments and also various tables with compiled information about their evaluation. All of this information can help career counselors to locate assessments that are the most appropriate for their clients, and also can help to customize their intervention. The categorization also helps to find assessments with good psychometric properties and those which are proven to be evidence-based measures. Study 2 provides evidence to support the construct validity and internal structure of the CDDQ, which can be used by career counselors in Romania. Moreover, investigating measurement invariance of the CDDQ across various groups ensures that the concept of career indecision is interpreted in the same way, and implies that it can be used with diverse samples. Then, the discovered latent mean differences of Study 2 between boys and girls among Romanian, Hungarian and Hebrew language groups, between rural and urban participants, high school classes (with different profiles), online and paper-and-pencil format, and across time points, are not defined by the errors in measurement.

The results of Study 3 recommend that school psychologists and career counselors consider measuring and addressing worry of students in the last two years of high school, in order to treat career decision-making difficulties and negative dysfunctional emotions. Especially in grade 12 students more likely experience increased negative dysfunctional emotions. The main contribution of Study 4 is the REBT theory based career intervention course which consists of regular career counseling elements and also rational-emotive behavioral therapy techniques. We managed to prove that this short and group-based method helps to reduce career decision-making difficulties, irrational cognitions, and emotional distress.

4.3 SUMMARY OF GENERAL CONCLUSIONS

We provide a short summary of the various conclusions of the thesis:

1) The proposed categorization of career decision-making assessments can help in clarifying when and for what types of career decision-making difficulty each instrument can be used.

2) The information about the assessments' psychometrics is in line with the evidence-based approach can help counselors and researchers to choose the "right" measure for their work.

3) The *Career Decision-making Difficulties Questionnaire* is proven to be invariant across gender, high-school class, language, format, class profile, living area and time points.

4) The results of the latent mean differences show a higher level of career decision-making difficulties for: girls, Hungarians, online format, natural science profile, and urban students

5) High school students' career decision-making difficulties interact with worry and lead to increased negative dysfunctional emotions.

6) Lack of readiness, lack of information and inconsistent information increased negative dysfunctional emotions at medium and high level of worry, but not at low level of worry.

7) Grade as a secondary moderator, has an additional enhancing effect over the moderation effect of worry for lack of readiness.

8) The REBT enhanced career intervention decreases high school students' career indecision, irrational beliefs, emotional distress up to six months after the intervention.

9) The REBT enhanced career intervention course is an efficient and effective method which can be delivered to a large number of high school students in a short time and in a group-based setting.

4.3 LIMITATIONS AND FUTURE DIRECTIONS

The first limitation of Study 1 is that we only focused on process-based career decision-making assessments, however content-based assessments (i.e., interests, abilities) are equally important in career counseling. Second, some multidimensional assessments measure the same constructs with their scales, while others measure different constructs with their scales. Future research should investigate the appropriateness of our categorization. Moreover, future research should examine how much the constructs intersect and have similarities within and between the categories of *Antecedents* by investigating the relations among the assessments within the categories and subcategories and also among subcategories. Then, future studies might also examine how relevant the categories for different types of transitions are (e.g., from school to work or from job to job).

The major limitation of Study 2 is related to the three datasets involved in our study including two East-European countries and one country from the Middle-East. Then, the Hebrew data could not be used for measurement invariance across classes, class profiles, format and living areas since this information was missing from the dataset. Then, we applied a self-assessment tool which might result in some bias in the results, thus future research should involve career counselors as an additional information source. We tested two high school classes and two types of high school class profiles, therefore future research should repeat our study with more classes and with more diverse profiles.

One of the limitations of Study 3 is that the moderation analyses have been done on a cross-sectional sample, therefore we cannot assess worry as a causal factor. It is possible that the relations between career decision-making difficulties and negative dysfunctional emotions is bidirectional, therefore longitudinal studies are needed in future research to reveal the causality between career decision-making difficulties and negative dysfunctional emotions and the causal relationship's dependence on worry. Next, the tendency of anxious people to be more worried also must be taken into account, which might cause the strong connection between worry and negative dysfunctional emotions. Other possible moderators can be tested in the future.

Then, the limitation of Study 4 first lies in the sample of the study, which was from one country (Romania). Second, the data was collected from two cities and from high-schools. Future research should investigate the REBT career intervention method in vocational schools, collecting data from a wider range of cities or even across countries. Third, the limitation of a longitudinal study is the possibility of participants dropping out, which decreased the sample size especially at the six-month follow-up session. Fourth, we used short and concise assessments with high school students, but future research should also assess them with more elaborative tools. Fifth, the participation in this study was voluntary, but was built into the schedule of the classes, which brings the motivation of the students into question.

Nevertheless, despite the listed limitations of the studies, the research of this thesis presents a major contribution to the literature. Future studies might further investigate our theoretical contributions, the proposed classification of assessments and the findings about the associations between career decision-making difficulties and negative dysfunctional emotions. Next, future research might replicate our experimental studies with larger and more heterogeneous samples. Finally, determining causality of the associations between career decision-making difficulties and emotional distress and detecting the mechanism of change can be also targets for future research.