Testing the Structure of the Career Decision-Making Difficulties Questionnaire

across Country, Gender, Age, and Decision Status

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Abstract

Many individuals face difficulties when making a career decision. Gati, Krausz, and Osipow (1996) proposed a taxonomy that classifies career decision-making difficulties into three major clusters, which are further subdivided into 10 categories. Based on the proposed taxonomy, they developed the Career Decision-making Difficulties Questionnaire (CDDQ), which has been since adopted and used in more than 50 countries. Despite its widespread use, the dimensionality of the CDDQ has not yet been fully demonstrated nor its measurement invariance sufficiently confirmed. To test the validity of the internal structure of the CDDQ, the data of 32,556 individuals from Australia, Canada, China, India, South Africa, United Kingdom, and the United States of America, who filled out the English version of the CDDQ on their own initiative, were analyzed. Confirmatory factor analysis supported the original taxonomy and the reliability of the CDDQ scores. The CDDQ also demonstrated scalar invariance across the seven countries, gender, and age, but not career decision status. As career indecision is a major construct in vocational psychology, validating the internal structure of the CDDQ is a fundamental psychometric step with important theoretical, research, and practical implications.

Keywords: career indecision, career decision-making, measurement invariance, cross-cultural

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Career choices are among the most complex, important decisions individuals face in life. They have profound implications for individuals' economic, social, and psychological well-being (Blustein, 2008; Fouad & Bynner, 2008). Planning a future career path can, however, be a difficult process (Gati, Krausz, & Osipow, 1996; Gati & Levin, 2014; Lipshits-Braziler, Gati, & Tatar, 2015). Indeed, although some individuals progress through the stages of career decision-making smoothly and easily, others face difficulties during this process (Amir & Gati, 2006). Such difficulties can impede the process—prevent or delay beginning the process, halt it before a decision is reached, or lead to a less than optimal decision that may result in a lack of commitment or regret (Gati et al., 1996, 2013; Mau, 2001). Slaney (1998) used the general term "career indecision" for the difficulties encountered in a state of undecidedness. This state is marked by a need to resolve problems and difficulties in order to become decided. Similarly, Peterson, Sampson, Lenz, and Reardon (2002) suggested that such difficulties might reflect a gap between an existing state of indecision and a desired state of decidedness marked by the selection of a course of action.

Identifying the causes of difficulties in career decision-making is one of the first steps in helping individuals overcome indecision (Gati & Levin, 2014; Xu & Bhang, 2019). Identifying these causes allows vocational psychologists and career counselors to tailor their approach and interventions to the specific needs and characteristics of each client (Braunstein-Bercovitz, 2014; Brown & Ryan Krane, 2000). Over the years, various models and measures of career indecision have been developed (for a review, see Xu & Bhang, 2019). The Career Decision Scale (CDS) was among the first measures of career indecision, assessing the overall severity of career indecision as a unidimensional construct (Osipow, Carney, & Barak, 1976). Subsequent models

and measures of career indecision represented a multidimensional approach to indecision, including the Career Decision Profile (CDP; Jones, 1989) and the Career Factors Inventory (CFI; Chartrand, Robbins, Morrill, & Boggs, 1990). In general, various causes of difficulties in career decision-making have been proposed, including cognitive-related (e.g., Creed, Patton, & Bartrum, 2004; Gati et al., 1996; Hacker, Carr, Abrams, & Brown, 2013; Santos, Ferreira, & Gonçalves, 2014), emotion-related (e.g., Germeijs, Verschueren, & Soenens, 2006; Saka & Gati, 2007), and personality-related (e.g., Braunstein-Bercovitz, 2014; Saka & Gati, 2007).

Tinsley (1992) argued that measures of career indecision (e.g., CDS, Osipow et al., 1976; CFI, Chartrand et al., 1990) were developed independently of theoretical considerations. In an attempt to meet Tinsley's (1992) challenge—to develop a theoretically-derived assessment—Gati et al. (1996) proposed a taxonomy for career indecision based on decision theory (Gati, 1986; Pitz & Harren, 1980). The taxonomy proposed by Gati and colleagues (1996) is a comprehensive one that analyzes career indecision based on its causes, dividing these difficulties into those that may arise prior to engagement in the career-decision-making process and those that may arise during the process. The taxonomy includes three major clusters of difficulties, subdivided into 10 specific categories. The major cluster Lack of Readiness includes three difficulty categories that typically arise prior to engagement in career decision-making: (a) lack of motivation to engage in the process, (b) general indecisiveness (i.e., involving decisions in various areas), and (c) dysfunctional beliefs about career decision making. The other two difficulty clusters, Lack of Information and Inconsistent Information, include difficulties that typically arise during the process. Lack of Information refers to (a) the decision-making process, (b) the self, (c) occupations or careers, and (d) ways of obtaining information or help. The cluster of Inconsistent Information includes (a) unreliable information, (b) internal conflicts—conflicts within the individual, and (c) external conflicts—conflicts with significant others. The Career Decision-

Making Difficulties Questionnaire (CDDQ; Gati et al., 1996) was developed on the basis of this taxonomy.

Today, more than 20 years after its initial introduction, the CDDQ has been translated into 48 languages across more than 60 countries. Despite its widespread, extensive use, however, the validity of the CDDQ—in terms of dimensionality, reliability, and measurement invariance—has only been partially demonstrated. In the present research, we aimed at validating the internal structure of the English version of the CDDQ, which served as the basis for the development of most of the other versions of this measure.

The Structure of the CDDQ

In the present study we adopted the approach of the American Educational Research Association, which states that structural validity is evaluated on the basis of how well the associations among test items conform to the hypothesized structure of the underlying construct (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999). Specifically, validity based on internal structure has three principal aspects: dimensionality, reliability, and measurement invariance (Rios & Wells, 2014).

Dimensionality. Rios and Wells (2014) define dimensionality as "determining if the inter-relationships among the items support the intended test scores that will be used to draw inferences" (p. 13). Factor analysis, predominantly confirmatory factor analysis, is the most common analytical approach for assessing dimensionality. To date, the original multidimensional internal structure of the CDDQ (32-10-3-1, for items, scales, clusters, and total score, respectively) has been supported among Arabic-speaking Israeli high school students (Hijazi, Tatar, & Gati, 2004), English-speaking Americans deliberating about their future (Kleiman & Gati, 2004), French-speaking Canadian high-school students (Sovet, DiMillo, & Samson, 2017),

Greek undergraduates (Vaiopoulou, Papavassiliou-Alexiou, & Stamovlasis, 2019), Hebrew-speaking Israelis deliberating about their future (Kleiman & Gati, 2004), and Turkish high-school students (Bacanli, 2016). Other studies, however, did not support the original dimensionality of the CDDQ, but rather suggested considering a revised internal structure (e.g., Babarović & Šverko, 2016; Creed & Yin, 2006; Mau, 2001; Sovet, Tak, & Jung, 2015; Vahedi, Farrokhi, Mahdavi, & Moradi, 2012). Creed and Yin (2006), for example, reported low reliability and low item-total correlations for the major cluster Lack of Readiness. They therefore suggested removing this cluster from the CDDQ structure, resulting in a two-factor solution that includes only the clusters Lack of Information and Inconsistent Information. Vahedi and his colleagues (2012) also reported problems confirming the 10-factor structure of the CDDQ among Iranian college students due to the low internal inconsistency of the categories in the Lack of Readiness cluster. Poor factor loadings for the dysfunctional beliefs category were reported for Taiwanese and U.S. college students (Mau, 2001), Korean college students (Sovet et al., 2015), and Croatian high-school students (Babarović & Šverko, 2016). Overall, these results indicate the importance of testing the original dimensionality of the CDDQ, as well as considering alternative models that might better represent the relations among the items, scales, and clusters of the CDDQ.

Reliability. A second aspect of validity based on internal structure involves the internal consistency reliability, which represents "the reproducibility of test scores on repeated test administrations taking under the same conditions and is operationally defined as the proportion of true score variance to total observed score variance" (Rios & Wells, 2014, p. 114). Cronbach's α is the most common measure of reliability, although it can be biased when the measurement errors are uncorrelated (Rios & Wells, 2014). Most studies have reported adequate reliability estimates for the total score of the CDDQ (e.g., Gati & Saka, 2001; Osipow & Gati, 1998) and for two of the three difficulty cluster scores (e.g., Gati & Saka, 2001; Hijazi et al., 2004). However, most

studies reported a low reliability estimate for the Lack of Readiness cluster (e.g., Creed & Yin, 2006; Gati & Saka, 2001; Hijazi et al., 2004; Vahedi et al., 2012). Since many studies did not consider the ten difficulty category scores, the reliability estimates of these scores were often unreported. In other studies, a low loading or reliability estimate for the dysfunctional beliefs category was often reported (e.g., Babarović & Šverko, 2016; Mau, 2001; Sovet et al., 2015). Due to these results, the present research tests the reliability estimates of the total CDDQ score, the three major difficulty cluster scores, and the ten difficulty category scores.

Measurement Invariance. Measurement invariance is the issue of whether the measurement of latent constructs varies across groups (Xu & Tracey, 2017). Underlying this psychometric issue is an important societal concern, the fairness of measuring across different subgroups of a population (Rios & Wells, 2014). In this respect, if the measurement of latent scores varies across groups, it may be concluded that the measure contains construct-irrelevant variance that may lead to a systematic bias across groups. Multi-group confirmatory factor analysis (MGCFA; Kline, 2015) is the most common analytic approach for testing measurement invariance (Rios & Wells, 2014; Xu & Tracey, 2017; see Method for further details).

To date, the measurement invariance of the CDDQ has been tested mainly across groups from the same country, such as the Korean version, across genders (Sovet et al., 2015), and the French version, across linguistic identities in Canada (Sovet et al., 2017). To the best of our knowledge, only one study tested the measurement invariance of the CDDQ across countries: Switzerland and Burkina Faso (Atitsogbe, Moumoula, Rochat, Antonietti, & Rossier, 2018). The results of this study indicated that the CDDQ has measurement invariance across the two countries, as well as across genders. Thus, the measurement invariance of the CDDQ across country and gender has been tested only sporadically. Furthermore, no previous study tested the measurement invariance of the CDDQ across age groups or decision statuses. Establishing

measurement invariance prior to testing for differences among groups is considered a critical methodological step to ensure the comparability of obtained scores (Chen, 2008). This procedure helps avoid discriminatory assessments and may offer additional evidence for the equity principle in comparisons involving diversified populations (Carr et al., 2014; Duarte & Rossier, 2008).

The Present Study

The present study was aimed at testing the three aspects of validity based on the internal structure of the English version of the CDDQ: dimensionality, reliability, and measurement invariance. We compared and tested three competing models of the CDDQ using confirmatory factor analysis. In light of previous findings, we predicted that the dimensionality of the full original theoretical model of the CDDQ would not result in an adequate fit. Rather, a revised model—without the Lack of Readiness cluster or the dysfunctional beliefs scale—would be more likely to do so. This prediction is based on a second set of hypotheses regarding the reliability of the CDDQ scores. We hypothesized that most of the CDDQ scores would demonstrate adequate reliability estimates, but that the reliability estimates for the Lack of Readiness cluster and the dysfunctional beliefs category would be lower. To ensure that the chosen model would be replicated across country, gender, age, and decision status, the measurement invariance of the English version was also tested. In light of previous research on the measurement invariance of other linguistic versions of the CDDQ, we predicted full measurement invariance for the chosen CDDQ model across country, gender, age, and decision status.

The present research also tested group differences in the CDDQ results. First, we explored differences among seven countries. Mau (2001) suggested that individuals from collectivistic cultures are less prepared to deal with decisions independently and are more likely to have trouble with issues involving personal needs (see also Fan, Cheung, Leong, & Cheung, 2014). We therefore predicted that the Eastern samples in our study (i.e., China and India) would exhibit

higher CDDQ scores than the predominantly Western, native English-speaking samples (i.e., Australia, Canada, United Kingdom, and United States of America). Second, we tested for gender differences in the CDDQ results. Most previous studies found no such differences (e.g., Albion & Fogarty, 2002; Kleiman et al., 2004; Lease, 2004; Lipshits-Braziler et al., 2015). For this reason, we did not predict that gender differences would emerge. Third, we tested for age-related differences in the results. Di Fabio, Palazzeschi, Levin, and Gati (2015) hypothesized that the total CDDQ score decreases with age. Their findings showed, however, that among the age range of high school students and university students, the level of career indecision was associated more with critical periods of career decision-making than with age. Nevertheless, in the absence of an extensive previous body of research, we predicted on the basis of theoretical considerations that career indecision would decrease with age if a broader age range is investigated. Furthermore, we hypothesized that this difference would be the result of a decrease in the cognitive causes of career indecision (i.e., Lack of Information), whereas more emotional or personality-related causes of career indecision (i.e., Lack of Readiness) would be less likely to decrease with age. We also tested for differences in the scores among decision status groups. In light of previous results (e.g., Amit & Gati, 2013; Buzzetta, Lenz, & Kennelly, 2017), we predicted that higher scores would be associated with a less advanced career decision status.

Method

Participants

We analyzed the data of 39,189 users of www.cddq.org, a free, anonymous online career service. The analyzed data was from users aged 14 to 50 from seven countries who chose to fill out the English version of an online career indecision assessment (the CDDQ) on their own initiative for personalized feedback, between September 2003 and February

2018. We do not have direct information about how the participants found out about the CDDQ; there are several Internet sites with a link to www.cddq.org (including NCDA.org), and it is listed as an evidence-based free resource in several career assessment books. In the present study, we included the data of participants from all the countries with a minimal sample size of 200 participants, as this is the minimal sample size appropriate for the analyses of dimensionality (Kline, 2015). The data of 6,633 users were excluded from the analyses for the following reasons: 3,449 (8.8%) because they filled out the assessment in less than three minutes and 3,184 (8.1%) because their responses to the two embedded validity items were inappropriate. Of the 32,556 users whose data were included in the analyses, 21,527 (66.1%) were from the USA (M_{age} = 28.2, SD_{age} = 9.4, 69.5% women), 4,620 (14.2%) from Australia (M_{age} = 18.1, SD_{age} = 6.8, 60.8% women), 4,058 (12.5%) from Canada (M_{age} = 25.4, SD_{age} = 8.3, 68.8% women), 747 (2.3%) from South Africa (M_{age} = 21.5, SD_{age} = 6.0, 64.5% women), 718 (2.2%) from China (M_{age} = 24.1, SD_{age} = 5.0, 65.7% women), 489 (1.5%) from the UK (M_{age} = 27.9, SD_{age} = 10.1, 62.0% women), and 397 (1.2%) from India (M_{age} = 25.1, SD_{age} = 7.5, 45.6% women).

Instruments

The Career Decision-Making Difficulties Questionnaire (CDDQ; Gati et al., 1996). The CDDQ is a 34-item questionnaire comprising 32 career decision-making difficulty items and two validity items. It assesses 10 specific difficulties within the three major clusters of Lack of Readiness, Lack of Information, and Inconsistent Information, as well as providing a total global difficulty score. The major cluster of Lack of Readiness includes the three difficulty categories of (a) lack of motivation to engage in the process, (b) general indecisiveness (i.e., involving decisions in various areas), and (c) dysfunctional beliefs about career decision making. The major

cluster Lack of Information includes lack of information in four areas: (a) the decision-making process, (b) the self, (c) occupations or careers, and (d) ways of obtaining information or help. The major cluster Inconsistent Information includes three difficulty categories: (a) unreliable information, (b) internal conflicts (i.e., conflicts within the individual), and (c) external conflicts (i.e., conflicts with significant others). The participants rated their level of agreement with each statement on a 9-point Likert-type scale (1 "does not describe me" to 9 "describes me well"). The scale scores are defined as the means of the items in each scale; higher scores indicate more career decision-making difficulties. Gati et al. (1996) reported Cronbach-alpha internal consistency reliability estimates of .95 for the total CDDQ score, .63, .95, .89 for the three major clusters, and a median internal reliability estimate of .77 for the 10 category scores. In the present study, the reliability estimate of the total CDDQ score was .94, while the estimates for the three major clusters were .66, .94, and .88; the median internal-consistency reliability estimate was .79 for the ten category scores. More detailed reliability information is reported in the **Results**.

The Range of Considered Alternatives question (RCA; Saka & Gati, 2007). The RCA elicits participants' career decision status in terms of the range of occupational alternatives they are currently considering, from (1) "I do not even have a general direction", to (2) "I have only a general direction", (3) "I am deliberating among a small number of specific occupations", (4) "I am considering a specific occupation, but I would like to explore other options before I make my decision", (5) "I know which occupation I am interested in, but I would like to feel sure of my choice", and (6) "I am already sure of the occupation I want". Participants are instructed to choose the one statement out of six that best describes their current career decision status. The RCA has been found useful in measuring advancement toward making a career decision (Amit & Gati, 2013; Saka, Gati, & Kelly, 2008), measuring career decidedness (Buzzetta et al., 2017), and assessing the effectiveness of interventions (Buzzetta et al., 2017; Gati, Ryzhik, & Vertsberger,

2013; Lipshits-Braziler et al., 2015).

Procedure

The data of users of the English version of the CDDQ were collected from the www.cddq.org website—a free, anonymous, public website aimed at facilitating career decision-making. Participants choose on their own initiative to fill out the CDDQ as part of their career decision-making process and to get immediate, individualized feedback about the causes of their career decision-making difficulties, with recommendations about how to overcome them. The users were informed that their responses might be used for improving the questionnaires as well as for research purposes. The participants provided consent for such use by clicking on the link to fill out the online CDDQ. The time needed for filling out the online questionnaire ranged from 6 to 10 minutes.

Analytical Approach

Dimensionality. To test the dimensionality of the English version of the CDDQ, a Confirmatory Factor Analysis (CFA) with maximum likelihood rotation was performed, using the R package lavaan (Rosseel, 2012). Model fit was assessed with various standard goodness-of-fit indices, including the χ^2-degrees of freedom ratio (χ^2/df), the comparative fit index (CFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Tests including the χ^2 statistic are considered unreliable for large samples (Tabachnick & Fidell, 2007). Thus, given the large sample size—with a participant-to-item ratio as high as 1,017—we did not consider using this index in the present study, but rather based our inferences about model fit on the CFI, RMSEA, and SRMR indices. For these indices, a model is considered acceptable when CFI $\geq$ .90, and RMSEA and SRMR $\leq$ .10, and good when CFI $\geq$ .95, RMSEA $\leq$ .08 and SRMR $\leq$ .06 (Hu & Bentler, 1999; Weston & Gore, 2006). When the model fit was inconsistent with these conventions, we inspected the modification indices to reveal the correlated

measurement error among the items.

Measurement Invariance. To test the measurement invariance of the English version of the CDDQ across country, gender, age, and decision status, a series of Multiple Group Confirmatory Factor Analyses (MGCFA) with maximum likelihood rotation was performed using the R package lavaan (Rosseel, 2012). Across groups, we sequentially constrained parameters in three models: the configural, metric, and scalar models. The configural model is the first and most basic component of measurement invariance. In this model, the equivalence of the internal structure among groups is tested (i.e., the number of factors and the patterns of factor loadings). A poor fit of the configural model suggests that the organization of the indicators is different among the groups. In the metric model, the constraint of equal factor-loading across groups is added (Byrne & van de Vijver, 2010). In the scalar model, the constraint of equal indicator intercepts across groups is added as well. Measurement invariance is established by sequentially comparing and testing the decrease in fit from one model to the subsequent one. When a less restrictive model produces a better fit, the assumption of factorial invariance for the more restrictive model is rejected (e.g., configural vs. metric invariance). The reduction in fit from one model to another can be tested with the χ^2 test. However, because the χ^2 statistic is highly sensitive to sample size, the decrease in fit was tested in the present research using three other criteria: changes in CFI, RMSEA, and SRMR values. In the test for metric invariance, a change of .010 in CFI supplemented by a change of .015 in RMSEA or .030 in SRMR indicates a lack of invariance; in the test for scalar invariance, a change of .010 in CFI, supplemented by a change of .015 in RMSEA or a change of .010 in SRMR, indicates a lack of invariance (Chen, 2007).

Results

Dimensionality

The original (32-10-3-1) model. The original hierarchical model of the CDDQ was first

tested with the 32 items regressed onto their respective first-order factors, the ten first-order factors regressed onto their respective second-order factors, and the three second-order factors regressed onto a one common third-order factor (32-10-3-1). The results for this model revealed a moderate degree of fit, CFI = .89, RMSEA = .064, and SRMR = .057. Whereas the RMSEA and the SRMR values were below .08, indicating good fit, the CFI value was just below the .90 threshold, putting the fit of this model into doubt.

The two second-order-factor (32-10-2-1) model. Previous research indicated that the Lack of Readiness cluster is heterogeneous in its composition of the three categories of lack of motivation, general indecisiveness, and dysfunctional beliefs (e.g., Creed & Yin, 2006; Vahedi et al., 2012). As a result of these findings, we tested a second model in which we eliminated the second-order factor of Lack of Readiness. In this model, as in the original model of the CDDQ, the 32 CDDQ items were first regressed onto their respective first-order factors. In contrast to the original model, however, only the first-order factors that were originally included in the second-order factors of Lack of Information and Inconsistent Information were regressed onto their respective second-order factors. Then these two second-order factors, together with the three remaining first-order factors originally included in the Lack of Readiness cluster, were regressed onto a common third-order factor. The fit of this model was similar to that of the original (32-10-3-1) model, CFI = .89, RMSEA = .064, SRMR = .057. Although the χ^2 difference was significant, $\Delta\chi^2$ (1) = 101.64, $p < .001$, the CFI values of the two models were equal, indicating that these models are equivalent in terms of fit (Cheung & Rensvold, 2002). Thus, we concluded that the heterogeneity among the Lack of Readiness subscales does not account for the moderate fit of the original model.

Nine first-order-factor (28-9-3-1) model. Previous studies also indicated poor factor loading for the dysfunctional beliefs category in the Lack of Readiness cluster (e.g., Babarović &

Šverko, 2016; Mau, 2001; Sovet et al., 2015). In light of these findings, we considered a third alternative model for the CDDQ in which we eliminated the four items of dysfunctional beliefs and its first-order factor. In this model, as in the original one, the remaining 28 items were first regressed onto their respective first-order factors, the nine remaining first-order factors were then regressed onto their respective second-order factors, and the three second-order factors were regressed onto a one common third-order factor. The fit of this model was adequate, CFI = .90, RMSEA = .070, SRMR = .049, but nonetheless not statistically different from that of the original (32-10-3-1) model. Although the χ^2 difference was significant, $\Delta\chi^2$ (113) = 7,482.6, $p < .001$, a ΔCFI of .01 indicated that the fit of the two models is equivalent (Cheung & Rensvold, 2002). Thus, the psychometric properties of the dysfunctional beliefs category do not account for the moderate fit of the original model.

Final model. A comparison of the fit indices of these three models of the CDDQ indicates that they do not differ much. Therefore, we decided to retain the original (32-10-3-1) model and inspect the modification indices for significant covariances among items to improve its fit. We found that an increase in fit could be achieved by adding three error covariances, between (a) Items 2 and 3 from the category of lack of motivation, (b) Items 13 and 14 from the category of lack of information about the process, and (c) Items 16 and 17 from the category of lack of information about the self. The fit of this modified model was adequate, CFI = .91, RMSEA = .059, SRMR = .053, better than that of the original model. The χ^2 difference was significant, $\Delta\chi^2$ (3) = 9,557.7, $p < .001$, and ΔCFI was .02. We therefore concluded that the modified model resulted in a better fit than the original one, with all 32 indicators showing significant loadings ($p < .001$) on their respective first-order factors (median loading = .75, interquartile range: .67-.79).

Reliability

The Cronbach's α internal-consistency reliability estimates of the CDDQ total score was .94, and those of the Lack of Readiness, Lack of Information, and Unreliable Information major clusters were .66, .94, .88, respectively. The Cα of the three scales in the Lack of Readiness cluster were .55, .74, and .69, for lack of motivation, general indecisiveness, and dysfunctional beliefs, respectively. The Cα of the scales in Lack of Information cluster were .90, .87, .87, and .76, for lack of information about the decision-making process, the self, occupations or careers, and ways of obtaining information or help, respectively. The Cα of the scales in Inconsistent Information were .78, .80, and .83, for unreliable information, internal conflicts, and external conflicts, respectively. The median internal-consistency reliability estimate of the scales was .82; however, the reliability of the lack of motivation category ($\alpha = .55$) was below the acceptable threshold. The poor reliability of this category in the present study is likely the result of the particular traits of the participants in this study—namely, that they were all motivated enough to look for and fill out an online career assessment. Supporting this hypothesis is the low mean and standard deviation of the scores in this category ($M = 2.90$, $SD = 1.54$).

Measurement Invariance and Group Differences

Country. The configural model for country demonstrated adequate fit, CFI = .91, RMSEA = .060, SRMR = .053. The metric model resulted in a similar fit, CFI = .90, RMSEA = .059, SRMR = .068. Although the χ^2 difference was significant, as might be expected due to the large sample size, $\Delta\chi^2$ (186) = 784.16, $p < .001$, the ΔCFI < .01 and the ΔRMSEA < .01 indicated that the fit of the two models was equivalent. The fit for the scalar model was similar, CFI = .90, RMSEA = .059, SRMR = .068. Although the χ^2 difference was significant, as might be expected due to the large sample size, $\Delta\chi^2$ (108) = 2638.46, $p < .001$, the small ΔCFI < .01 and the ΔRMSEA < .01 indicated that the fit of the two models was equivalent. Therefore, we concluded

that the modified 32-10-3-1 internal structure of the CDDQ was replicated and found to be equivalent across the seven countries at the level of scalar invariance.

The top section of Table 2 presents the means and standard deviations of the three major difficulty cluster scores and the total score for each country separately. In light of the significant age differences between the groups, F (6, 32,549) = 881.70, $p < .01$, $\eta^2 = .14$, we entered age as a covariate. A multivariate analysis of covariance (MANCOVA), with age as a covariate, revealed significant differences in the three cluster scores among the seven countries, F (6, 32,549) = 78.30, $p < .01$, $\eta^2 = .01$. We conducted a follow-up series of univariate analyses of covariance (ANCOVAs) to test the differences in these three scores among the seven countries. As depicted in Table 2, the results revealed significant differences in Lack of Readiness, F (6, 32,548) = 99.88, $p < .01$, $\eta^2 = .02$, Lack of Information, F (6, 32,548) = 187.50, $p < .001$, $\eta^2 = .03$, and Inconsistent Information, F (6, 32,548) = 165.30, $p < .001$, $\eta^2 = .02$. Consistent with these differences, Australia and USA exhibited the lowest total scores and China and India the highest ones, F (6, 32,5498) = 207.00, $p < .01$, $\eta^2 = .03$.

Gender. The configural model for gender demonstrated adequate fit, CFI = .91, RMSEA = .060, SRMR = .052. The metric model resulted in a similar fit, CFI = .91, RMSEA = .058, SRMR = .057. Although the χ^2 difference was significant due to the large sample size, $\Delta\chi^2$ (45) =474.47, $p < .001$, the small ΔCFI < .01 and the ΔRMSEA < .01 indicated that the fit of the two models was equivalent. The fit for the scalar model was similar, CFI = .91, RMSEA = .059, SRMR = .057. Again, although the χ^2 difference was significant due to the large sample size, $\Delta\chi^2$ (18) = 1,197.20, $p < .001$, the small ΔCFI < .01 and ΔRMSEA < .01 indicated that the fit of the two models was equivalent. Thus, the modified 32-10-3-1 internal structure of the CDDQ was replicated and found equivalent at the level of scalar invariance across gender as well.

The middle section of Table 2 presents the means and standard deviations of the three major difficulty cluster scores and the total score separately for women and men. A MANOVA revealed significant gender differences in the three cluster scores, F (1, 32,554) = 40.73, $p < .01$, $\eta^2 < .01$. We conducted a follow-up series of ANOVAs to further test for gender differences in these three scores. As depicted in Table 2, the results revealed statistically significant but negligible gender differences in Lack of Readiness, F (1, 32,554) = 81.13, $p < .001$, $\eta^2 < .01$, Lack of Information, F (1, 32,554) = 114.32, $p < .001$, $\eta^2 < .01$, and Inconsistent Information, F (1, 32,554) = 55.99, $p < .001$, $\eta^2 < .01$. Men consistently exhibited higher scores than women in the three difficulty cluster scores as well as the total score, F (1, 32,554) = 106.48, $p < .01$, $\eta^2 < .01$.

Age. To test measurement invariance across age groups, we used four age categories: adolescents (14-18; n = 7,571), early young adults (19-24, n = 10,370), young adults (25-30, n = 5,745), and adults (31-50; n = 8,870). The configural model for age demonstrated adequate fit, CFI = .91, RMSEA = .060, SRMR = .053. The metric model resulted in a similar fit, CFI = .90, RMSEA = .059, SRMR = .066. Although the χ^2 difference was significant due to the large sample size, $\Delta\chi^2$ (135) = 1,645.50, $p < .001$, the small ΔCFI < .01 and the ΔRMSEA < .01 indicated that the fit of the two models was equivalent. The fit for the scalar model was similar, CFI = .90, RMSEA = .060, SRMR = .066. Again, although the χ^2 difference was significant due the large sample size, $\Delta\chi^2$ (54) = 3,361.70, $p < .001$, the small ΔCFI < .01 and the ΔRMSEA < .01 indicated that the fit of the two models was equivalent. Thus, the modified 32-10-3-1 internal structure of the CDDQ was replicated and found equivalent for the four age groups at the level of scalar invariance.

The bottom section of Table 2 presents the means and standard deviations of the three major difficulty cluster scores and the total score separately for each age group. A MANOVA

revealed significant age differences in the three cluster scores, F (3, 32,552) = 154.97, $p < .01$, $\eta^2 = .01$. We conducted a follow-up series of ANOVAs to further test for age differences in these three scores. As depicted in Table 2, the results revealed significant age differences in Lack of Readiness, F (2, 32,552) = 413.16, $p < .001$, $\eta^2 = .04$, Lack of Information, F (2, 32,552) = 199.75, $p < .001$, $\eta^2 = .02$, and Inconsistent Information, F (3, 32,552) = 122.62, $p < .001$, $\eta^2 = .01$. For the three cluster scores, participants aged 19-24 reported the greatest difficulties, next those 14-18, then 25-30, and those aged 31-50 the least difficulties. Thus individuals aged 19-24 had higher mean total scores than those aged 14-18; and individuals aged 25-30 had lower total scores than the two younger age groups, while those aged 31-50 had the lowest total score, F (3, 32,552) = 275.47, $p < .001$, $\eta^2 = .03$.

Decision Status. The information about decision status (i.e., the response to the RCA question) was available for only 12,749 (39.2%) participants. Thus the measurement invariance of the CDDQ across decision status was tested only for this subsample. The configural model for decision status resulted in inadequate fit, CFI = .89, RMSEA = .057, and SRMR = .052. For this reason, a series of confirmatory factor analyses (CFAs) were performed to test the dimensionality of the CDDQ for each of the six decision statuses separately. As can be seen in Table 3, the dimensionality of the CDDQ was supported only among the most decided group. As indicated by the CFI values, the fit of the model increased monotonically with the degree of decidedness of the groups. In light of these results, we did not carry out further analyses of the participants' decision status.

Discussion

The present study considered three aspects for evaluating internal structure—dimensionality, reliability, and measurement invariance—and provided substantial evidence for the validity of the Career Decision-making Difficulties Questionnaire (CDDQ), a measure which

applies decision theory to vocational behavior (Argyropoulou & Kaliris, 2018; Gati, 2013; Gati, Levin, & Landman-Tal, in press). We tested three competing models to evaluate the dimensionality of the CDDQ using the data of 32,556 individuals from seven countries. Then, after demonstrating an adequate dimensionality model, which overlaps with its original taxonomy, we also tested and found support for the reliability of its scores as well as its measurement invariance across country, gender, and age, although not for career decision status. For country, gender, and age, these results indicate that career decision-making difficulties as measured by the CDDQ have similar meanings across the different samples. The support for measurement invariance allowed estimating the magnitude of the group differences in the CDDQ scores. Overall, we observed small group differences, indicating a greater role for individual than group differences in explaining the causes and overall levels of career indecision.

Dimensionality

To confirm the dimensionality of the CDDQ, we compared three competing models: the original (32-10-3-1) model underlying the CDDQ taxonomy, a two-second-order factor (32-10-2-1) model, and nine-first-order factor (28-9-3-1) model. The fit of these three models was similar, but below the acceptable threshold. We therefore considered a fourth model, derived from the original one, in which we allowed the error terms of three pairs of items to covary. This modified model resulted in the best fit for the data, indicating that the ten difficulty categories are differentiated and grouped within three distinctive major clusters, which can then be aggregated into a single total score.

Reliability

After constructing an adequate model for the dimensionality of the CDDQ, we computed the internal reliability estimates for its scores. Those for the total CDDQ score and the three major cluster scores were good overall and similar in magnitude to those reported in previous studies.

The reliability estimates of the Lack of Information and Inconsistent Information cluster scores (.94 and .88, respectively), and the total CDDQ score (.94) were high. However, consistent with previous findings (e.g., Creed & Yin, 2006; Hijazi et al., 2004; Vahedi et al., 2012), the reliability estimate of Lack of Readiness cluster score was lower (.68). This can be attributed to the low reliability of its scales and its greater heterogeneity (as reflected in the low intercorrelations among its three scales [$r \leq .20$]). Nevertheless, a dimensionality model that did not include this cluster did not demonstrate superior fit to the original model of the CDDQ.

While the median reliability estimate of the 10 difficulty categories was good (.80), the reliabilities of two category scores in the Lack of Readiness cluster were low. The lowest estimate was found for lack of motivation (.55), which can be explained by the low mean and variance of this scale score. The low mean score for lack of motivation indicates that most of the participants in this study, actual users of an online career guidance website, were indeed highly motivated to engage in the process of career decision-making. A low reliability and a low mean score for this category were also reported by a sample of career counselees who had applied for individual counseling (Gati, Osipow, Krausz, & Saka, 2000). These findings suggest that when researchers or practitioners are assessing people's motivation for career decision-making, they may consider using alternative measures, such as the Lack of Readiness subscale of the Career Indecision Profile (CIP; Hacker et al., 2013) or the Readiness to Make a Career Decision subscale of the Career Planning Confidence Scale (CPCS; McAuliffe et al., 2006).

A higher reliability estimate, acceptable yet still lower than desirable, was also found for the category of dysfunctional beliefs (.69). Several previous studies have reported a poor reliability estimate for this category (Gati et al., 1996, 2000, 2013; Gati, Amir, & Landman, 2010; Sovet et al., 2015; Xu & Tracey, 2014). Hechtlinger, Levin, and Gati (2019) suggested that the low reliability of the dysfunctional beliefs score might be attributable to the heterogeneity of the

items in this scale of the CDDQ. Indeed, for the Dysfunctional Career Decision-Making Beliefs questionnaire (DCB; Hechtlinger et al., 2019), which allows assessing five specific types of dysfunctional beliefs, the reliabilities of the scales were adequate (.72 to .83), considering that each scale includes three items. However, the intercorrelations between the five scales were lower (.10-.28 and.15-.41, in two large samples), supporting the claim that having one dysfunctional belief is often not associated with having others, and thus that a total score for dysfunctional beliefs is likely have low reliability. Nevertheless, as most studies focus on the global score of the CDDQ or its three cluster scores, the CDDQ is suitable for use in research and practice, as these scores are reliable and more comprehensive than alternative measures based on other homogenous content assessments.

Measurement Invariance and Group Differences

A third focus of the present study was validating the measurement invariance of the CDDQ across country, gender, age, and career decision status. To the best of our knowledge, the present study is the first that tested the English version of the CDDQ for measurement invariance. We tested configural, metric, and scalar invariance for each the four variables, and then examined the mean group differences.

Country. Despite the inclusion of both predominantly English-speaking countries (i.e., Australia, Canada, South Africa, United Kingdom, and United States of America) and countries in which English is less likely to be the participants' native language (i.e., China and India), the achieved measurement invariance across the seven countries indicates that the dimensionality underlying the CDDQ as well as the response patterns of the participants from different countries are equivalent. This finding demonstrates the adequacy of using the English version for individuals with sufficient English proficiency. In the comparison among countries, participants from India and China consistently exhibited the highest and second highest total and cluster

scores. In particular, the differences for Lack of Information and Inconsistent Information were greater than those for Lack of Readiness. Similar findings were reported by Mau (2001), who found that Taiwanese students using the Chinese version of the CDDQ reported more difficulties than American students in all three clusters and the total score. Mau (2001) attributed these differences to the cultural differences between the groups, suggesting that individuals from collectivistic cultures are less prepared to deal with decisions by themselves and are more likely to have trouble with issues involving personal needs. However, in a later study, Willner, Gati, and Guan (2015) found that Chinese participants had higher scores than American and Israeli participants only for the Inconsistent Information cluster. Cultural differences may underlie these observed group differences. Alternatively, these findings may suggest that in this study greater indecision among participants from India and China led them to seek online career counseling in other languages than their own.

Gender. Measurement invariance at the level of scalar invariance across gender allowed testing gender differences. In the present study, men had higher scores than women in the total CDDQ as well as the three cluster scores. Nevertheless, these differences were negligible in terms of effect size ($\eta^2 < .01$). These results are compatible with previous findings that did not report gender differences in CDDQ scores (Albion, 2000; Gati et al., 1996, 2000; Kleiman et al., 2004; Lease, 2004; Leung, Hou, & Li, 2011; Lipshits-Braziler et. al, 2015; Osipow & Gati, 1998). Among the studies that did find gender differences, the most consistent finding indicated that men reported greater difficulties in lack of motivation (Gati et al., 2013; Hijazi et al., 2004) and external conflicts (Gati & Saka, 2001; Gati et al., 2013; Hijazi et. al, 2004). Taken together, the accumulated evidence suggests that the measurement of career indecision using the CDDQ does not suffer from a gender bias, and that men are likely to report a higher level of career indecision than women.

Age. Scalar invariance was also demonstrated in comparing four age groups: adolescents (14-18), early young adults (19-24), young adults (25-30) and adults (31-50). We found two developmental patterns in the subsequent analyses of age group differences. On the one hand, difficulties involving Lack of Information or Inconsistent Information decreased with age. Previous findings had shown that career indecision decreases from adolescence to early young adulthood (Albion & Fogarty, 2002; Di Fabio et al., 2015) or from one year to the next in high school or university (Babarović & Šverko, 2016; Sovet et al., 2015). A steady decrease in difficulties involving Lack of Information and Inconsistent Information from adolescence to adulthood reflects the growing acquisition of knowledge relevant for career decision-making as well as increased adjustment to social expectations. On the other hand, difficulties involving Lack of Readiness and the total indecision score increased from adolescence to early young adulthood but then decreased with age. Patton and Creed (2001) argued that career indecision is not likely to demonstrate age developmental patterns but more likely to vary during school or work-related transitions. This possibility fits the pattern of difference in the difficulties involving Lack of Readiness, which indicate a marked increase in difficulties at the point of choice of academic majors. Considering the small magnitude in effect size ($\eta^2 \leq .04$) of all the age differences found in the present study, our findings support this notion that career indecision is more influenced by specific stages and individual differences than by age. Altogether, the results of the present study provide a better, finer-grained understanding of the age-related developmental patterns of career indecision across a wide age range.

Decision Status. The CDDQ was found to be measurement-variant across career decision status. Subsequent tests using a series of confirmatory factor analyses revealed that the dimensionality of the CDDQ was supported only among decided individuals. In fact, similar results were reported in a validation study of the Chinese version of the CDDQ (Tien,

2005). The finding that the dimensionality of the CDDQ is supported only among decided individuals may suggest that increased career indecision may be associated with reduced awareness and ability to identify the causes of indecision. These results may at least partially explain the inconsistencies that were reported for the dimensionality of the CDDQ in previous studies, reflecting that this dimensionality is not supported in studies with samples that were less decided on average.

Although the dimensionality of the CDDQ was supported across the entire sample, future studies are needed to investigate the role of decision status in determining patterns of responses to career indecision measures. For example, differences in the correlation matrices as found in the present study would reflect different response patterns. To better understand such differences, researchers should use more than one measure of career indecision. Concurrent assessment using several career indecision measures would allow investigating differences in the convergent and divergent validity of such measures among groups of individuals differing in their decision status (e.g., whether the meaning of career indecision factors is different for decided vs. undecided samples).

Limitations

Before discussing the implications of the present study, its limitations should be acknowledged. First, the present findings are limited to the English version of the CDDQ and to those individuals who filled out the CDDQ as part of their usage of an online career guidance service. Future research should also compare different linguistic versions and conduct preliminary tests of the measurement invariance across them. Second, the study included individuals from China and India), which are both considered Eastern, collectivistic cultures, and whose primary language is not necessarily English. The participants from these two countries are more likely to be individuals with higher than average English proficiency. Because these two samples exhibited

some differences from the Western countries in which English is the primary language, future research should seek to distinguish the effects of culture and the language of administration on CDDQ differences and further investigate cultural differences in the CDDQ and its applicability to non-native English speakers from these as well as other countries. Third, the present study investigated gender and age-related differences across countries. Although measurement invariance was reached at the scalar level across the seven countries, our sample was predominately from the USA (66%). For this reason, results for gender and age differences may have been biased. Future studies should seek to replicate the reported gender and age differences within countries. Fourth, age-related differences were investigated in the present study in a between-subject research design. Future research should aim at validating these patterns of developmental changes using longitudinal, within-subject designs. Fifth, the age range of the participants indicates that different people are likely to face different types of career-related transitions and decisions. Nonetheless, the present study did not collect information on the nature of the decision each participant was facing. Future research should systematically compare the use of the CDDQ during career transitions (e.g., choice of college, major, job change). Finally, the internal reliabilities of Lack of Readiness and two of its subscales were less than adequate ($\alpha \leq .70$), suggesting that the associated difficulties are rather heterogeneous. In addition, the error terms of three pairs of CDDQ items were allowed to covary to obtain an adequate model for the dimensionality of the CDDQ. Future research should aim at improving these items. For these reasons, we suggest reformulating some of the items in the Lack of Readiness cluster or adding other relevant items.

Research and Practical Implications

Using a systematic approach to the internal structure validation of instruments (Rios & Wells, 2014), the present study validated the underlying original taxonomy of the CDDQ as well

as its internal structure, based on tests of dimensionality, reliability, and measurement invariance. These findings support Xu and Bhang's (2019) conclusion that the CDDQ is one of the three reliable and valid measures of career indecision in current use (in addition to the Emotional and Personality Career Difficulty questionnaire (EPCD; Saka & Gati, 2007) and the Career Indecision Profile (Hacker et al., 2013). Xu and Bhang's (2019) integrative five-factor model of indecision includes, in addition to the need for information, lack of readiness, and interpersonal conflicts factors, which are assessed by the CDDQ, the factors of neuroticism/negative affectivity and choice/commitment anxiety, which are often associated with career indecisiveness (e.g., the EPCD; Saka & Gati, 2007). Previous studies have demonstrated the contribution of neuroticism/negative affectivity and choice/commitment anxiety to the emergence of career indecision. Braunstein-Bercovitz and her colleagues, for example, showed that the association between attachment style and career indecision is mediated by choice/commitment anxiety (Braunstein-Bercovitz, Benjamin, Asor, & Lev, 2012), as well as by self-criticism, a marker of neuroticism/negative affectivity (Braunstein-Bercovitz, 2014). Such findings highlight the importance of considering cognitive, emotional, and personality-related causes of indecision.

The present study also demonstrated the measurement invariance of the CDDQ across country, gender, and age. In this respect, it confirms the conclusions of previous research drawn from the comparison of CDDQ scores across groups classified on the basis of these variables (e.g., Di Fabio et al., 2015; Gati & Saka, 2001; Willner et al., 2015). Our results support the structural equivalency of the English version of the CDDQ across seven cultural contexts. Nevertheless, this support is currently restricted to its English version, and therefore for use with individuals proficient in English.

One important implication of the present study involves the issue of developmental patterns of career indecision. In the present study, cognitive causes of indecision, such as lack of

information or information synthesis, consistently decreased from adolescence to adulthood. In contrast, more emotional or personality-related causes of indecision, which lack general indecisiveness, increased from adolescence to young adulthood but then decreased with age. While the category of general indecisiveness also decreased with age, starting in young adulthood (see Table 1), it remained the category with the highest mean scores over people's life span. From a theoretical standpoint, career indecision has been typically regarded a normative, temporary stage experienced by many individuals during the early phases of career decision-making (Brown & Rector, 2008; Gati, 2013; Osipow, 1999; Tinsley, 1992). Indecisiveness, in contrast, has been conceptualized as involving more persistent difficulties stemming from emotional or personality-related factors that impair individuals' career decision-making abilities for a longer period of time (Callahan & Greenhaus, 1992; Kelly & Lee, 2002; Saka et. al, 2008; Santos, 2001). The differential developmental patterns of career indecision, as measured by the three CDDQ major clusters, thus partially support the distinction between indecision and indecisiveness.

The advantage of using the CDDQ as a measure of career indecision in research as well as practice is supported not only by its psychometric properties but also by the fact that it assesses the specific causes of career indecision in terms of ten difficulty categories. Indeed, the CDDQ makes it possible to assess, for example, what information is lacking (e.g., regarding the self or careers) and not only whether this lack of information is perceived as a cause of difficulty in career decision-making. Previous empirical studies and case studies illustrate the advantage of considering specific causes of career indecision at this level to tailor career interventions for the particular needs of each client (e.g., Gati et al., 2000; Levin & Gati, 2014; Rochat & Rossier, 2016). Furthermore, Rochat (2019) suggested attending to extreme responses to even individual items. At the same time, the ten CDDQ difficulty categories are not often considered in research (but see e.g., Mau, 2001; Sovet et al., 2015). This is likely due to the lower reliability estimates of

these scores as well as the increased complexity of use of the CDDQ at this level. Our findings also show that the informativeness of CDDQ scores is unlikely to be affected by clients' country of origin, gender, or age. These findings indicate that there is no need to develop distinct norms for different groups. Thus the present study offers substantial support for the continued use of the CDDQ in practice as a multidimensional measure of career indecision (Gati & Levin, 2014; Xu & Bhang, 2019).

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Table 1

Means and Standard Deviations of the 10 CDDQ Difficulty Categories

	Lack of Readiness			Lack of Information				Inconsistent Information		
	Rm	Ri	Rd	Lp	Ls	Lo	La	Iu	Ii	Ie
Country										
Australia	3.05^{c}	5.35^{c}	4.04^{c}	4.85^{c}	4.44^{d}	4.59^{d}	4.08^{c}	3.98^{d}	4.10^{c}	3.17^{c}
N = 4,620	(1.58)	(1.98)	(1.59)	(2.09)	(2.03)	(2.05)	(2.04)	(1.89)	(1.73)	(2.10)
Canada	2.88^{d}	6.00^{a}	4.08^{c}	5.21^{b}	4.71^{c}	5.15^{b}	4.44^{b}	4.28^{c}	4.45^{b}	3.19^{c}
N = 4,058	(1.54)	(1.95)	(1.67)	(2.33)	(2.21)	(2.25)	(2.25)	(2.06)	(1.81)	(2.28)
China	3.58^{a}	5.98^{a}	4.69^{b}	5.19^{b}	5.14^{ab}	5.31^{a}	5.11^{a}	4.53^{b}	4.90^{a}	3.73^{b}
N = 718	(1.69)	(1.70)	(1.39)	(1.93)	(1.93)	(1.86)	(1.91)	(1.84)	(1.57)	(2.07)
India	3.38^{ab}	5.76^{ab}	5.67^{a}	6.04^{a}	5.29^{a}	5.48^{a}	5.42^{a}	4.94^{a}	4.73^{ab}	4.19^{a}
N = 397	(1.80)	(1.94)	(1.61)	(2.12)	(2.19)	(2.19)	(2.24)	(2.26)	(1.86)	(2.58)
South Africa	2.71^{e}	5.54^{b}	4.62^{b}	4.72^{c}	4.08^{e}	4.50^{cd}	3.82^{cd}	3.96^{d}	4.01^{cd}	3.15^{c}
N = 747	(1.53)	(1.93)	(1.64)	(2.25)	(2.08)	(2.18)	(2.12)	(1.96)	(1.67)	(2.20)
UK	3.26^{bc}	5.78^{a}	4.09^{c}	5.16^{bc}	4.84^{bc}	4.78^{c}	4.35^{b}	4.41^{bc}	4.55^{b}	3.15^{c}
N = 489	(1.50)	(1.93)	(1.51)	(2.03)	(1.91)	(1.91)	(2.07)	(1.94)	(1.67)	(2.11)
USA	2.84^{de}	5.48^{b}	3.93^{c}	4.40^{d}	3.87^{e}	4.25^{e}	3.59^{d}	3.64^{e}	3.86^{d}	2.59^{d}
N = 21,527	(1.52)	(2.05)	(1.64)	(2.39)	(2.23)	(2.25)	(2.21)	(2.06)	(1.89)	(2.02)
Gender										

Male		3.24[a]	5.22[b]	4.22[a]	4.83[a]	4.32[a]	4.57[a]	4.01[a]	3.89[a]	4.10[a]	2.97[a]
	N = 10,558	(1.62)	(2.01)	(1.65)	(2.25)	(2.14)	(2.16)	(2.16)	(1.98)	(1.78)	(2.08)
Female		2.74[b]	5.70[a]	3.92[b]	4.52[b]	4.03[b]	4.41[b]	3.76[b]	3.79[b]	3.98[b]	2.11[b]
	N = 21,998	(1.48)	(2.02)	(1.63)	(2.38)	(2.25)	(2.30)	(2.24)	(2.09)	(1.89)	(2.00)
Age Group											
14-18		3.01[a]	5.42[c]	4.24[a]	4.85[a]	4.39[a]	4.64[b]	4.00[a]	3.94[a]	4.02[b]	3.10[a]
	N = 7,571	(1.60)	(1.96)	(1.59)	(2.14)	(2.10)	(2.12)	(2.07)	(1.94)	(1.76)	(2.14)
19-24		2.99[a]	5.86[a]	4.30[a]	4.87[a]	4.39[a]	4.76[a]	4.05[a]	3.95[a]	4.18[c]	3.01[b]
	N = 10,370	(1.57)	(1.92)	(1.60)	(2.30)	(2.22)	(2.21)	(2.20)	(2.04)	(1.81)	(2.15)
25-30		2.82[b]	5.74[b]	3.99[b]	4.45[b]	3.88[b]	4.31[c]	3.66[b]	3.77[b]	4.02[b]	2.68[c]
	N = 5,745	(1.49)	(2.00)	(1.63)	(2.42)	(2.23)	(2.29)	(2.25)	(2.10)	(1.91)	(2.09)
31-50		2.76[b]	5.16[d]	3.53[c]	4.24[c]	3.73[c]	4.06[d]	3.58[b]	3.61[c]	3.82[c]	2.43[d]
	N = 8,870	(1.48)	(2.14)	(1.64)	(2.45)	(2.23)	(2.34)	(2.31)	(2.11)	(1.95)	(1.96
Across		2.90	5.54	4.02	4.62	4.12	4.46	3.84	3.82	4.02	2.81
	N = 32,556	(1.54)	(2.03)	(1.64)	(2.34)	(2.22)	(2.26)	(2.22)	(2.05)	(1.86)	(2.11)

Note. Within each group comparison and score, means with different superscripts are statistically different (*t*-test or Tukey post-hoc test, $p < .05$). Rm = lack of motivation to engage in the process; Ri = general indecisiveness; Rd = dysfunctional beliefs about career decision-making; Lp = lack of information about the decision-making process; Ls = lack of information about the self; Lo = lack of information about occupations or careers; La = lack of information about ways of obtaining information or help; Iu = unreliable information; Ii = internal conflicts; Ie = external conflicts.

Table 2

Means and Standard Deviations of the Three Major CDDQ Clusters and the Total Score

	Lack of Readiness	Lack of Information	Inconsistent Information	Total Score
Country				
Australia	4.15^{de}	4.49^{d}	3.75^{de}	4.13^{d}
N = 4,620	(1.14)	(1.79)	(1.59)	(1.29)
Canada	4.32^{c}	4.88^{c}	3.97^{cd}	4.39^{c}
N = 4,058	(1.15)	(1.99)	(1.70)	(1.37)
China	4.75^{b}	5.19^{b}	4.39^{b}	4.77^{b}
N = 718	(1.01)	(1.61)	(1.51)	(1.13)
India	4.94^{a}	5.56^{a}	4.62^{a}	5.04^{a}
N = 397	(1.09)	(1.83)	(1.83)	(1.27)
South Africa	4.29^{cd}	4.28^{de}	3.71^{e}	4.09^{d}
N = 747	(1.11)	(1.86)	(1.58)	(1.24)
UK	4.37^{c}	4.78^{c}	4.04^{c}	4.40^{c}
N = 489	(1.05)	(1.67)	(1.56)	(1.15)
USA	4.08^{e}	4.03^{e}	3.36^{f}	3.82^{e}
N = 21,527	(1.16)	(2.04)	(1.69)	(1.41)

Gender				
Male	4.23[a]	4.43[a]	3.65[a]	4.10[a]
N = 10,558	(1.18)	(1.93)	(1.63)	(1.35)
Female	4.12[b]	4.18[b]	3.50[b]	3.93[b]
N = 21,998	(1.14)	(2.05)	(1.72)	(1.42)
Age Group				
14-18	4.22[b]	4.47[a]	3.68[a]	4.13[b]
N = 7,571	(1.13)	(1.85)	(1.62)	(1.31)
19-24	4.38[a]	4.52[a]	3.71[a]	4.20[a]
N = 10,370	(1.11)	(1.98)	(1.68)	(1.37)
25-30	4.19[b]	4.07[b]	3.49[b]	3.92[c]
N = 5,745	(1.12)	(2.06)	(1.73)	(1.41)
31-50	3.81[c]	3.90[c]	3.29[c]	3.67[d]
N = 8,870	(1.18)	(2.09)	(1.72)	(1.43)
Across	4.16	4.26	3.55	3.99
N = 32,556	(1.16)	(2.02)	(1.70)	(1.40)

Note. Within each group comparison and score, means with different superscripts are statistically different (*t*-test or Tukey post-hoc test, $p < .05$).

Table 3

Confirmatory Factor Analysis for the CDDQ, Separately for Each Career Decision Status

Career Decision Status	*N*	χ^2/df	CFI	RMSEA	SRMR
I do not even have a general direction.	1,330	6.02	.84	.061	.064
I have only a general direction.	2,036	7.93	.86	.058	.056
I am deliberating among a small number of specific occupations.	1,989	7.74	.88	.058	.053
I am considering a specific occupation, but I would like to explore other options before I make my decision.	2,345	8.22	.89	.055	.053
I know which occupation I am interested in, but I would like to feel sure of my choice.	2,561	9.44	.89	.057	.052
I am already sure of the occupation I want.	2,488	7.74	.92	.052	.049