

The Impact of a College Career Intervention Program on Career Decision-Making Self-Efficacy, Career Indecision and Decision-Making Difficulties

Authors: Michele Lam and Angeli Santos

Authors' affiliations:

Angeli Santos: Division of Psychiatry and Applied Psychology, School of Medicine, University of Nottingham, Nottingham, UK

Michele Lam: Division of Organisational and Applied Psychology, University of Nottingham Malaysia Campus, Semenyih, Malaysia

Corresponding author and details:

Dr Angeli Santos, Division of Psychiatry and Applied Psychology, School of Medicine, University of Nottingham, YANG Fujia, Jubilee Campus, Wollaton Road, Nottingham NG8 1BB, UK, email: angeli.santos@nottingham.ac.uk, Tel: +44 115 8466639

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Career Indecision and Decision-Making Difficulties**

Abstract

A quasi-experimental longitudinal intervention study utilizing intervention and comparison groups was carried out with first-year Malaysian college students in order to evaluate the effectiveness of a careers course designed to help students in their career decision making. Participants in both groups were given questionnaires assessing career decision self-efficacy, career indecision and career decision-making difficulties at various time points. Career indecision and decision-making difficulties are different constructs in that research on career indecision encompasses a wider area wherein the identification of sources of career indecision, often referred to as decision-making difficulties, is one line of research. Gender differences at the outset and over the duration of the course were also examined. Results indicated that upon completion of the course participants in the intervention group experienced increased career decision self-efficacy and reduced career indecision compared to the comparison group. An overall decrease in career decision-making difficulties was also observed but further investigation revealed that the decrease was not significant in one of 10 subcategories of difficulties. Although gender differences in career indecision and career decision making difficulties were observed at the outset, these disappeared over the course of the intervention. Implications and suggestions for further research are discussed.

Keywords: career decision-making; career decision self-efficacy; career indecision; career interventions; career decision-making difficulties

The Impact of a Career Intervention Program on Career decision self-efficacy, Career Indecision and Decision-Making Difficulties

Career counsellors, psychologists and practitioners are often presented with the challenge of helping students who are undecided about a course or career. Hartman, Fuqua and Hartman (1983) reported that if undecided students did not receive help, they were more likely to drop out of school and were unhappy with their eventual choice of career. Furthermore, undecided students may make poor career and academic choices which could have an impact on their future career and employment success (Gati, Krauz & Osipow, 1996; Fouad, Cotter & Kantamneni, 2009). While recognition of the need for career interventions for college students has increased compared to two decades ago (Fouad et al., 2009; Reese & Miller, 2010), only a few studies have systematically evaluated the impact and outcomes of career interventions designed to reduce career indecision. In addition, the majority of intervention studies have been conducted on Western populations thereby restricting the generalizability of findings across cultures. Therefore, there is a need to investigate whether theory-based interventions that have shown positive outcomes on Western samples can be applied in a Southeast Asian context. This study aims to address this gap by examining the effects of a career intervention developed to help Malaysian students increase their career decision self-efficacy (CDSE), and reduce their career indecision and decision-making difficulties (CDD).

The Malaysian Educational Context

The number of students entering post-secondary education in Malaysia has almost doubled in the last decade, from 251,252 students enrolled in undergraduate programs in institutions of higher learning in 2002 to 479,244 in 2011 (Higher Education Statistics 2011, First Edition 2012, published by the Ministry of Higher Education, Malaysia). Despite greater access to higher education, students receive little guidance in making decisions about their future careers. The implementation of theory-based career interventions for students in government-funded schools (which form the majority of schools in the country) are entirely absent and only a

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small number of private schools offer career guidance to students. It would be unfair to assume that such a problem is limited to Malaysia. Indeed, Reese and Miller (2006) reported that many career interventions carried out in schools and colleges even in the United States were not based on contemporary evidenced-based research and career theory.

Typically, Malaysian students undergo six years of primary education and five years of secondary education. After completing secondary education, students move on to one- or two-year long pre-university programs in colleges prior to attending university. While students may ponder over course or career-related decisions at secondary school, it becomes imperative during their pre-university studies because of the need to specify their intended course of study at University applications. While this may not be a requirement for admission into all universities in the US, a study by Kleiman et al. (2004) found that sophomores at an American university faced increased levels of career decision making difficulties compared to seniors because students were expected to declare their chosen major in their sophomore year. Because students in Malaysia need to decide on their intended field of study during their pre-university studies, prior to applying for admission to university, it is at this stage of their career development that they are likely to encounter the increased difficulties in career decision-making.

Career Decision-Making Research

Much research within career decision-making focuses on investigating career indecision, career decision self-efficacy and career decision-making difficulties. According to Osipow (1999), career indecision is a 'state which comes and goes over time' and is considered a typical developmental phase that many individuals experience as they make decisions. Career indecision may stem from a variety of sources, such as difficulties in personal and vocational identity, of which career decision making difficulties form a part (Gati, Krausz, & Osipow, 1996).

Career indecision can be measured by a variety of instruments such as the Career Decision Scale (CDS) which was developed following a series of "brainstorming" sessions in an attempt to identify the possible reasons people give to explain the sources of their career

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indecision (Osipow, Carney, Winer, Yanico & Koschier, 1976). Most users of the instrument use the measure as an overall index of one's level of career indecision. Examination of a person's responses to individual items can reveal information about the sources of the indecision, which can then be used to direct counseling approaches to the problem (Osipow, 1999). Career decision self-efficacy has been found to be significantly related to career indecision. Originally proposed by Bandura (1977) within his social cognitive theory, CDSE can be defined as an individual's belief or confidence that he or she is able to carry out tasks specific to making career decisions (Taylor & Betz 1983). Taylor and Betz (1983) hypothesized that weak decision-making self-efficacy would inhibit career exploratory behavior and the development of decision-making skills, which could, in turn, exacerbate career indecision and other problems in career decision-making. Using Crites' (1978) model of career maturity, Taylor and Betz (1983) developed the Career Decision Self-Efficacy Scale (CDSSES) to measure CDSE. The CDSSES is one of the most frequently used scales in the career counselling, vocational guidance and career development research across a variety of populations in North America, Western Europe, East Asia (Mau, 2000; Lo Presti et al, 2013; Jiang, 2014).

More recently, research on career indecision has tended to focus on the assessment of decision-making difficulties faced by students. According to Gati, Krausz and Osipow (1996), one of the central aims of career counselling is to help students overcome the difficulties they face during the career decision-making process. Career decision-making difficulties are defined as the difficulties or problems faced in the decision-making process which originate from a lack of readiness, lack of information and inconsistent information about the career decision making process (Gati et al., 1996). This taxonomy has been empirically tested and validated by the Career Decision-making Difficulties Questionnaire (CDDQ) in a broad variety of groups of various age cohorts and in several countries and cultures including the USA, Australia, the Middle East, and Britain. Researchers such as Gati et al. (1996) and Sepich (1987) argue that these difficulties typically lead to career indecision and that identifying the difficulties that prevent

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individuals from reaching a decision is a fundamental step in providing them with the help that they need in making career-related decisions and has direct implications for counselling and interventions.

Research has shown CDSE to be negatively related to CDD (Osipow & Gati, 1998; Creed, Patton & Bartrum, 2004; Amir & Gati, 2006; Nota, Ferrari, Solberg & Soresi, 2007)). In the study by Osipow and Gati (1998), students who reported greater decision-making difficulties also reported lower levels of CDSE. Similar findings were recorded by Amir and Gati (2006), suggesting that students with fewer difficulties in making career decisions also have higher levels of self-efficacy in carrying out tasks specific to making those decisions. These findings are significant for the purposes of the present study because they show how closely these three constructs (career indecision, CDD and CDSE) are related, and lend justification to the development of interventions aimed at increasing CDSE. While career intervention studies have not been implemented in Southeast Asian contexts, evidence that such constructs and their corresponding assessments are applicable in a non-Western context such as Malaysia is seen as critical to the development of any such intervention.

Modifying Career Decision Self-Efficacy

Research shows that CDSE is a malleable construct. As self-efficacy expectations are developed through the four sources of information based on self-efficacy theory, they can also be modified through these same sources (Betz, 2000). These include (a) performance attainments; (b) vicarious experiences of observing the performance of others; (c) verbal persuasion and social influences; and (d) physiological and emotional states from which people judge their capabilities, strengths and vulnerability to dysfunction (Bandura, 1986, p. 399). Many researchers have sought to incorporate one or more of these sources of information in their interventions in order to increase CDSE with some degree of success (Luzzo, Funk & Strang, 1996; Foltz & Luzzo, 1998; Uffelman, Subich, Diegelman, Wagner & Bardash, 2004; Sullivan & Mahalik, 2000; Scott & Ciani, 2008).

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The goal of interventions aimed at increasing CDSE is to ultimately reduce career indecision and CDD. Few studies however have examined career indecision and CDD as outcomes of career interventions. Grier-Reed & Skaar (2010) explored the effects of a constructionist course in accordance with the four sources of self-efficacy and reported significant increases in CDSE without any corresponding decreases in career indecision. Fouad et al. (2009) examined a career exploration course that provided students with opportunities to be exposed to the four sources of self-efficacy information and reported significant increases in CDSE and decreases in CDD. Both of these studies however did not use comparison groups and were unable to exclusively attribute outcomes to the intervention. Because of the limited amount of research measuring career indecision and CDD as outcomes in career intervention studies, the present study seeks to address this gap in the research literature by assessing career indecision and CDD as outcomes of a career intervention, in addition to CDSE.

Gender and Career Decision-Making

A clear understanding of the influence of gender in career decision-making is critical to providing appropriate career guidance and effective career development interventions (Niles & Harris-Bowlsbey, 2012). Several studies investigating the link between gender and career indecision have found some support that gender is not related to career indecision (Neice & Bradley, 1979; Lunneborg, 1975; Osipow, 1990; Taylor & Popma, 1990). However, it is possible that the effects of gender on career indecision are more apparent in cultures where female students are not given the same opportunities to make career decisions as men (Mau, 2000). In research on CDD, Gati et al. (1996) found no gender differences in their sample, however, when comparing British and Chinese international students studying in two British universities, Zhou and Santos (2007) reported that female students experienced significantly more difficulties compared to male students among British participants while there were no significant gender differences among Chinese participants.

In research on CDSE, studies have produced mixed results. Several studies found either

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minimal or no gender based differences in CDSE among college and school students (Chung 2002; Luzzo & Ward, 1995; Taylor & Popma, 1990; Taylor & Betz, 1983). However, Mau (2000) investigated cultural differences in CDSE between American and Taiwanese college students, and found that female Taiwanese students reported significantly lower CDSE compared to male Taiwanese students while there were no significant differences between female and male American students in terms of reported levels of CDSE, suggesting that there may be cultural influences related to the role of gender and CDSE. In studies investigating career interventions, Scott and Ciani (2008) found that female students reported greater intervention gains in CDSE compared to male students. However, upon examining two career courses for college students in Taiwan, Peng (2001) found that gender had no bearing on intervention effects.

In summary, the inconclusive findings regarding gender and career indecision, decision-making difficulties and CDSE suggest that more research is necessary to fully understand the impact of gender on interventions aimed at enhancing CDSE. In Malaysia, women remain under-represented in scientific and technical fields of study, resulting in a corresponding under-representation in industries requiring scientific and technical knowledge and qualifications (based on Key Indicators of the Labour Market Malaysia, 2001-2010, Department of Statistics, Malaysia). It is possible that the latter could be attributed to a lack of equal opportunities to engage in the decision-making process. Weak decision-making self-efficacy would therefore inhibit career exploratory behaviour and the development of decision-making skills, which could in turn result in problems in career decision-making (Betz, 2000). Given the importance of developing interventions that are sensitive to the needs of both men and women, the present study will further examine the role of gender on career indecision, CDD and CDSE over the course of the career intervention.

Critical Components of Career Interventions

In addition to career theories, specific techniques that have been shown to bring about positive outcomes should also be incorporated into career interventions. In a meta-analysis of

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career interventions identifying the components that are most influential on participant outcomes, Brown and Ryan Krane (2000) found that five out of 19 components found in interventions to be most influential in creating positive outcomes for participants. This is regardless of how the study was conducted, who participated in the intervention, and whether it was conducted in individual, group, class, or self-directed formats (Brown & Ryan Krane, 2000). These components include (a) workbooks and written exercises (b) individualised interpretations and feedback (c) world of work information (d) modelling, and (e) attention to building support.

Fouad et al., (2009) and Scott and Ciani (2008) examined career courses that incorporated Brown and Ryan Krane's (2000) critical ingredients in addition to the four sources of self-efficacy information, and reported an increase in CDSE and less difficulty in making career decisions. Reese and Miller (2006) evaluated a career development course that incorporated four of Brown and Krane's (2000) critical ingredients and reported significant increases in CDSE among university students and a reduction in perceived career difficulties. In a follow-up study, Reese and Miller (2009) made modifications to their course and incorporated all five critical interventions components and found that the effect sizes increased to close to 1.00 compared to the earlier study (0.55).

Although these studies provide support that the effectiveness of career interventions can be increased through incorporating these five critical ingredients, no such study has ever been conducted outside of the US. The present study extends prior efforts by examining a career intervention that incorporates these five components in a non-Western sample where research on career decision-making is scarce and career interventions sorely lacking.

Career Intervention Courses

There are many types of career courses with varying designs, e.g. classroom-based, computer assisted, etc. and functions. which are effective in reducing career indecision and difficulties, and enhancing CDSE (Folsom & Reardon, 2003; Peng & Herr, 1999; Peng, 2001; Scott & Ciani, 2008; Fouad et al., 2009). Given the positive outputs of career courses in reducing

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career indecision and decision-making difficulties, and enhancing CDSE, for the purpose of the present study, a careers course was developed to help Malaysian college students increase their CDSE, and help facilitate the career decision-making process. The present study employs Crites' theory together with Bandura's (1977) self-efficacy theory as the basis for the content of the course. Because career courses are virtually non-existent in Malaysia, the design and development of a theoretically-driven, empirically-based careers course was seen as an immense benefit to colleges participating in the study.

Purpose and Hypotheses

The present study examines the effects of a careers course on college students' career decision-making. Specifically, the study explores how a careers course that incorporates Bandura's four sources of information through which self-efficacy is modified in combination with Brown and Krane's (2000) five critical components of a career intervention affects students' CDSE, career indecision and CDD. The present study addresses the following research questions: (1) How does participation in this careers course affect students' CDSE, career indecision and CDD? (2) Do male and female students respond differently to career interventions?

The following hypotheses are proposed: (1) Students in the intervention group will exhibit a significant increase in CDSE and its subscales, and its effects will be maintained four weeks later (2) Students' overall career indecision will be reduced significantly after completing the course and its effects will be maintained four weeks later (3) Students in the intervention group will exhibit a significant reduction in overall CDD, and its main and subcategories, and its effects will be maintained four weeks later. Although it is predicted that gender will have an impact on the three constructs examined, a specific hypothesis concerning the amount of change by gender on any of the three constructs is not advanced.

Method

Participants

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The non-random sample consisted of 244 students enrolled in the General Certificate of Education Advanced Level course (popularly known as A Level, a pre-university course that prepares students for entry into undergraduate courses in local and overseas universities) at two colleges in the Kuala Lumpur and Selangor regions of Malaysia. Participants were in their first semester of study and were invited to participate on a voluntary basis. Four weeks prior to the intervention (Time 1 or T1), a briefing was conducted wherein all participants completed the three assessments. The intervention (treatment) group consisted of 123 participants who completed the intervention while 121 participants who did not attend the course but completed the assessments at Time 1 and Time 4 (four weeks after the intervention) were used as the comparison (control) group ($n = 244$). Of the 244 participants, 152 (62.3%) were female and 92 (37.7%) were male. Participants were aged between 16 and 19 years old with the majority aged 18 (86.9%) ($M = 17.95$).

81.1% of the participants were ethnic Chinese; 12.3% Indian; 2.9% Malay and 3.7% other. The ethnic composition of the sample is representative of private colleges in Malaysia where the majority are non-Malays. English is the second language of Malaysia, and students in the A Level course from which this sample of students was taken, are effectively bilingual. As such, the instruments were used as they are without being translated.

Intervention

The intervention was a course entitled “Effective Career Decision-Making: Skills for Making Successful Career Decisions”. This course was designed for students who are undecided about a major or career. Participants were required to attend two-hour classes once a week for four weeks (a total of eight hours) on a day that was assigned by the college. There were four topics (one topic a week) and the course was facilitated solely by the researcher.

The course content was based on Crites’ (1978) Career Maturity Theory and Bandura’s (1977) self-efficacy theory. According to Crites (1978), good career decisions are facilitated by

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five career choice competencies which include (a) accurate self-appraisal, (b) gathering occupational information, (c) goal selection, (d) making plans for the future, and (e) problem-solving. Therefore, effective career decision-making, firstly, involves the ability to accurately assess one's skills and preferences, and secondly, being able to effectively use a variety of resources to gain insights into the world of work and to research occupations. This includes identifying the education and training that will help students qualify for their future job or career. Students also need to know the steps to set realistic goals, and develop an action plan for achieving these goals. The ability to make good career decisions also hinges upon one's ability to solve problems so students are given the opportunity to learn problem-solving skills.

According to Betz (2001), career interventions that are able to enhance career decision self-efficacy are those that are based Bandura's four sources of information, resulting in positive outcomes (Sullivan & Mahalik, 2000; Fouad et al., 2009). Attention was paid to these four sources of information through which self-efficacy is modified. Specifically, students are able to experience the successful performance of a particular behaviour; given opportunities to identify with and learn from appropriate models; encouraged to believe in their own capabilities; and learn how to manage anxiety, and negative or self-defeating thoughts.

Research also shows that the effectiveness of career interventions can be increased by incorporating Brown and Krane's (2000) five critical intervention components, therefore, these components have also been included in the intervention. For example, all participants used a workbook that contained written exercises, and they were given individualized interpretations and feedback on their career and personality tests.

Course objectives, based on Crites' (1978) Career Maturity Theory, included the following: to (a) identify and list top personal values, interests, skills and achievements, and articulate own personality, and work and lifestyle preferences (b) identify relevant career resources that provide information on the world of work including jobs in demand and salary information (c) explore and identify course and career options based on interests and abilities (d)

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list the steps for selecting goals, and to set personal and academic goals (e) develop an action plan for the future that details steps to achieving the goals set earlier (f) identify the problems in a case study and propose solutions, and (g) identify obstacles and negative feelings that hinder the decision-making process, and list ways to overcome them.

A variety of techniques were used, including lectures, small group discussions, workbook activities, self-assessment instruments, and individual take-home assignments. Take-home assignments included informational interviews, readings of role models and a personal statement. Self-assessment instruments included the Holland's Self-Directed Search and a free online personality test based on the Myer-Briggs Type Indicator. Students completed a personal card-sort activity, a career genogram, and a case study on problem-solving. Students were also asked to consult individually with the instructor for feedback on self-assessment instruments.

The course provided sufficient opportunities for participants to be exposed to and participate in activities incorporating Bandura's four sources of information and Brown and Krane's (2000) five critical components. In addition, challenges and issues specific to young Malaysian adults were addressed through relevant activities throughout the course. See Table 1 for contents of the course and the sessions and activities that integrate Crites' (1978) Career Maturity Theory, Bandura's (1986) four sources of information and Brown and Krane's (2000) five critical components.

Procedure

Students were invited to participate in the study during their orientation week at college and were asked to complete a booklet called Making Career Decisions that consisted of three instruments: Career Decision Scale (CDS by Osipow et al., 1976), Career Decision-Making Difficulty Questionnaire (CDDQr by Gati & Saka, 2001), Career Decision Self-Efficacy Scale-Short Form (CDSES-SF by Betz, Klein & Taylor, 1996). This was the first time that students completed the instruments (T1). Students were then asked to complete the instruments four weeks later prior to the start of the course (T2). Data collected at T1 and T2 provided the baseline for each individual

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before the intervention commenced. Upon completion of the course four weeks later, participants completed the instruments again (T3). Four weeks later, students were asked to complete the instruments yet again (T4). At T1, T2 and T3, physical booklets were distributed and collected immediately after students had completed them. However, at T4, students completed the instruments online (within a week) as it was not possible to gather all students in one location at one specific time. Students in the intervention group completed the instruments at all four time points while students in the comparison group completed the instruments at T1 and T4 only.

As some participants had to complete the same instruments more than twice, counterbalancing of the three instruments was enforced to minimize order effects.

Instruments

Three instruments were contained within a booklet called Making Career Decisions. In addition to the three instruments, participants were asked to provide information on age, gender, and race.

1. Career Decision Scale (CDS by Osipow et al., 1976)

The Career Decision Scale was designed as an ‘instrument for surveying high school and college students about their status in the decision-making process’ (Osipow 1987, p. 1). It contains 16 items that form the Indecision Scale and a further two items form the Certainty Scale. However, for the present study, only responses to items from the Indecision Scale (IS) were analyzed.

Participants are asked to indicate how closely each item describes them using a four-point response continuum ranging from *Exactly like me* (4) to *Not at all like me* (1). Sample items include: *Several careers have equal appeal to me. I’m having a difficult time deciding among them* and *I can’t make a career choice right now because I don’t know what my abilities are.*

Mean scores range from one to four with higher scores indicating greater career indecision.

Several studies have reported internal consistency, test-retest reliabilities, and construct and concurrent validity of the CDS (Betz & Voyten, 1997; Guay, Senecal, Gauthie & Fernet, 2003; Osipow et al., 1976; Slaney, 1980; Osipow & Schweikert, 1981). In the present study,

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Cronbach's alpha for the IS ranged from .78 to .88 at four time points for the intervention group indicating a high level of internal consistency.

2. Revised version of the Career Decision Difficulty Questionnaire (CDDQr by Gati & Saka, 2001)

The CDDQ was first developed by Gati et al. (1996) to test the validity of a taxonomy of decision-making difficulties comprising lack of readiness, lack of information and inconsistent information, which are divided into subcategories and further divided into specific difficulty areas. Sample items include: *I know that I have to choose a career, but I don't have the motivation to make the decision now* and *I find it difficult to make a career decision because people who are important to me (such as parents and friends) do not agree with the career options I am considering and/or the career characteristics I desire*. Participants were asked to indicate how accurately an item describes them on a nine-point response continuum ranging from *Does not describe me* (1) to *Describes me well* (9). Scores for categories are obtained by summing the responses to all items in each category, while a total score is obtained by adding up the scores of three categories. Mean scores range from one to nine with higher scores indicating greater decision-making difficulties. An abridged version of the questionnaire (CDDQr) containing 34 items (Gati & Saka, 2001) was used in the present study for brevity sake. Amir and Gati (2006) reported a median scale reliability of .72 and total score reliability of .90. In another study with Chinese students by Leung et al. (2011), the alpha coefficients for the subcategories were .53 (readiness), .92 (lack of information) and .83 (inconsistent information). In the present study, reliability analyses indicate the internal consistency for the total scale ranged from .90 to .94 at four time points for the intervention group. Coefficient alpha for the subcategories were .55 (readiness), .92 (lack of information), and .79 (inconsistent information) at T1 which was comparable to the Chinese sample.

3. Career Decision Self-Efficacy Scale-Short Form (CDSES-SF by Betz et al., 1996)

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The Career Decision-Making Self-Efficacy Scale (CDESES) developed by Taylor and Betz (1983) was designed to measure self-efficacy expectations in carrying out tasks necessary for making career decisions. The CDESES-SF is the short form of the original CDESES and was used in the present study for brevity sake, consisting of five 5-item subscales and a total of 25 items. A shorter, five point response continuum was used in the present study, as a five-point scale provides scores as reliable and valid as those obtained with a ten-point scale (Betz, Hammond & Multon, 2005). Sample items include: *Use the Internet to find information about jobs or occupations that interest you* and *Decide what you value most in a job or occupation*. Participants were asked to rate their level of confidence in completing the given tasks, on a five-point confidence continuum ranging from *no confidence at all* (1) to *complete confidence* (5). The score for each subscale is calculated by summing the responses to the five items within each subscale and the total score by summing the responses to all the items. Mean scores range from one to five with higher scores indicating greater levels of self-efficacy in career decision-making. The CDESES-SF has been shown to be psychometrically sound with internal consistency reliabilities ranging from .73 to .83 for the five-item subscales and .94 for the total score (Betz et al., 1996). Other studies reported internal consistencies ranging from .69 to .97 (Betz & Voyten, 1997; Guay et al., 2003). The coefficient alpha of the total scale for the present sample ranged from .89 to .94 at four time points indicating a high level of internal consistency. Coefficient alpha for the subscales were .69 (self-appraisal), .64 (occupational information), .81 (goal selection), .76 (planning), and .65 (problem-solving).

Results

Effects of the careers course

To answer the first research question, data were analyzed on two levels: first, to identify the differences in scores on CDSE, CDD and career indecision between the intervention and comparison groups over time, and second, to demonstrate the effect of the intervention over time. For the first level of analysis, a mixed ANOVA was used to identify differences between

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intervention and comparison groups where group and time were the independent variables (IV) and the three career constructs were the dependent variables (DV). Effect sizes (i.e., partial η^2) are reported according to Cohen (1988) who suggested .10, .25 and .40 as small, medium and large.

CDSE There was a statistically significant interaction between group and time on CDMSE, $F(1,220) = 60.14, p < .001$, partial $\eta^2 = .22$. Between-subject ANOVAs indicated that at T1, the difference in CDSE scores between intervention and comparison groups was not significant ($p = .343$), but at T4, there was a statistically significant difference in CDSE between the two groups, $F(1, 220) = 41.32, p < .001$, partial $\eta^2 = .16$. Within-subject ANOVAs showed that for the comparison group, CDSE decreased significantly over time, $F(1,120) = 4.07, p = .046$, partial $\eta^2 = .03$. For the intervention group on the other hand, CDSE increased significantly over time $F(1, 100) = 57.83, p < .001$, partial $\eta^2 = .37$. Figure 1 depicts the interaction effects of group and time on CDSE.

The intervention group also showed significantly larger gains in the five subscales compared to the comparison group over time. Statistically significant interactions were found for all five subscales. Follow-up univariate and repeated measures tests also found statistically significant increases for all five subscales, where the largest gain was observed for goal setting (partial $\eta^2 = .32$). Table 2 presents the pre (T1)- and post (T4)-test scores for CDESES-SF and its five subscales for the intervention and comparison groups, and interaction effects.

CDD There was also a statistically significant interaction between groups and time on CDD, $F(1, 220) = 47.62, p < .001$, partial $\eta^2 = .18$. Between subjects ANOVAs revealed that at T1, the difference in CDDQ scores between intervention and comparison groups was not significant, $p = .493$. However, at T4, there was a statistically significant difference in CDD between intervention and comparison groups, $F(1, 220) = 24.95, p < .001$, partial $\eta^2 = .10$. Within-subject ANOVAs indicated that for the comparison group, CDD was not significantly

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different between T1 and T4 ($p = .597$) but CDD decreased significantly for the intervention group at T4 [$F(1, 100) = 77.44, p < .001, \text{partial } \eta^2 = .44$]. Figure 2 depicts the interaction effects of group and time on CDDQ.

A statistically significant interaction was also found between groups and time on the three main categories of the CDDQ namely lack of readiness [$F(1, 220) = 21.69, p < .001, \text{partial } \eta^2 = .09$], lack of information [$F(1, 220) = 31.13, p < .001, \text{partial } \eta^2 = .12$], and inconsistent information [$F(1, 220) = 38.97, p < .001, \text{partial } \eta^2 = .10$]. Interaction effects were significant for all 10 subcategories as well. Follow-up repeated measures tests showed that the change in the lack of motivation was not significant for the intervention group ($p = .193$). Table 3 displays the pre- and post-test scores for the CDDQr total, main and subcategories for the intervention and comparison groups, and interaction effects.

Career indecision There was a statistically significant interaction between groups and time on career indecision, $F(1, 220) = 28.11, p < .001, \text{partial } \eta^2 = .11$. Separate between-subject ANOVAs revealed that at T1, the difference in CDS scores between intervention and comparison groups was not significant ($p = .227$). However, at T4, there was a statistically significant difference in CDS between intervention and comparison groups, $F(1, 220) = 11.87, p = .001, \text{partial } \eta^2 = .05$. Separate within-subject ANOVAs showed that for the comparison group, career indecision was not significantly different between T1 and T4 ($p = .416$) but career indecision decreased significantly for the intervention group at T4 [$F(1, 100) = 54.14, p < .001, \text{partial } \eta^2 = .35$]. Figure 3 depicts the interaction effects of group and time on career indecision.

To demonstrate the impact over time of the intervention as a whole a repeated measures ANOVA was conducted on the intervention group only. Gender was entered as a between subjects factor in order to simultaneously analyze gender differences, although results pertaining to gender are presented in the following section.

CDSE CDSE was significantly different at different time points, $F(2.51, 250.64) = 71.46, p < .001, \text{partial } \eta^2 = .42$. Post-hoc analysis with a Bonferroni correction revealed that there was a

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significant decrease in CDSE before intervention from T1 to T2 ($p < .001$) and it increased significantly post-intervention from T2 to T3 ($p < .001$). Though there was a slight increase in CDSE from T3 to T4, the increase was not significant ($p > .05$).

CDD The intervention elicited statistically significant changes in decision-making difficulties over time, $F(2.31, 230.63) = 63.11, p < .001$, partial $\eta^2 = .39$. Post-hoc analysis with a Bonferroni correction revealed that there was a slight increase in CDD from T1 to T2, but the increase was not significant ($p > .05$). However, there was a significant decrease from T2 to T3, $p < .001$. There was a slight decrease in CDD from T3 to T4, but the decrease was not significant ($p > .05$). Results from repeated measures ANOVA for the main and subcategories of difficulties reveal that only changes in difficulties related to the lack of motivation were not significant at all four time points ($p = .311$).

Career indecision The intervention elicited statistically significant changes in career indecision over time, $F(2.46, 249.50) = 30.61, p < .001$, partial $\eta^2 = .23$. Post-hoc analysis with a Bonferroni correction revealed that the slight increase in career indecision from T1 to T2 was not significant ($p > .05$), but there was a significant decrease from T2 to T3, $p < .001$. The decrease in CDS from T3 to T4 was not significant ($p = .499$).

Gender and career decision-making

In order to answer research question two, interactions between gender and time from the previous repeated measures ANOVA are presented. MANOVA analyses were then conducted to examine mean differences between scores for male and female students at the four time points.

CDSE Results from repeated measures ANOVA showed that the interactions between time and gender on total CDSE were not significant, $F(2.54, 251.37) = .63, p = .569$, partial $\eta^2 = .01$. Follow-up MANOVA analyses revealed that mean CDSE scores for male and female students were not significantly different at all four time points. Analyses of the subscales of CDSE revealed no significant interaction between time and gender on all 4 time points. Follow-up MANOVA analyses revealed that mean scores between males and females were not

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significantly different at all 4 time points for 3 out of the 4 subscales of CDSE, with the exception of problem solving ($F(1,99) = 3.67, p=.050$, partial $\eta^2 = .05$) where mean scores for females ($M = 2.54$) were significantly lower than males ($M = 2.87$.) at Time 2 only. Following the intervention however, these differences disappeared.

(1) *Career indecision* Results from repeated measures ANOVA showed that the interaction between time and gender on career indecision was not significant, $F(2.50, 247.10) = .55, p = .614$, partial $\eta^2 = .01$. Follow-up MANOVAs revealed that mean scores for male and female students were significantly different at T2 ($F(1,99) = 3.97, p=.049$, partial $\eta^2 = .04$), where mean scores for male students ($M=2.60$) were slightly higher than female students ($M=2.39$) prior to the intervention. However, at T3 ($p=.494$) and T4 ($p=.474$), differences between male and female students were no longer significant. *CDD* Results from repeated measures ANOVA showed that the interaction between time and gender on career decision-making difficulties as measured by the total CDDQr was not significant, $F(2.30, 228.14) = .53, p = .618$, partial $\eta^2 = .01$. Follow-up MANOVA analyses revealed that mean scores for male and female students were not significantly different at all four time points.

Gender differences were also examined with respect to the main and subcategories of difficulties and results show that mean scores for male and female students were not significantly different for 9 out of 10 subcategories, with the exception of lack of motivation within the readiness subscale. MANOVA analyses revealed that there were significant differences in motivation at T1 ($F(1,99) = 11.05, p = .001$, partial $\eta^2 = .10$), with males ($M=4.24$) indicating a greater lack of motivation than females ($M=3.15$). There were also significant differences in motivation at T3, ($F(1,99) = 7.46, p = .007$, partial $\eta^2 = .07$), with males ($M=3.82$) exhibiting greater lack of motivation than females ($M=2.91$), however, differences were not significant at T2 ($p=.225$) or T4 ($p=.097$).

Discussion

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The purpose of this study was to evaluate the effectiveness of a careers course in reducing career indecision and CDD by increasing CDSE. On the whole, it can be said that the intervention was successful in achieving net gains in CDSE and reducing overall levels of career indecision, and career decision-making difficulties. First, it was hypothesized that on completion of the course, students' CDSE would increase significantly. The results show that career decision self-efficacy did increase significantly for the total scale and all five subscales after the course. The effect sizes were considered large (Cohen, 1988) with goal setting having the largest effect. This finding reinforces the evidence base that interventions incorporating Bandura's four sources of information through which self-efficacy is modified are indeed effective in modifying CDSE (Reese & Miller, 2006; Scott & Ciani, 2008). This study not only builds on the work of Miles and Naidoo (2016) who found gains in CDSE following the completion of careers intervention program based on Bandura's four sources of information and Brown and Crane's five critical ingredients, but goes one step further by demonstrating that such interventions can be effective in reducing career indecision and decision making difficulties.

The second hypothesis which proposed that career indecision will be reduced significantly after completing the course, was supported. Career indecision decreased significantly after the intervention and the effect size for the intervention group was large. While this finding appears to contradict the findings of Grier-Reed and Skaar (2010) who reported no change in career indecision despite an increase in CDSE, it is worth noting that Grier-Reed and Skaar's intervention did not target the reduction of indecision per se, but rather increasing feelings of empowerment through the notion of self-efficacy.

Third, it was hypothesized that the intervention will significantly reduce CDD, for both its main and subcategories. The study found that overall CDD and its three main categories of difficulties decreased significantly, and that effects were of medium size. Of the ten subcategories of CDD, only the one of the 10 subcategories, namely the lack of motivation, did not record a significant decrease in the intervention group. The intervention appears to have the

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largest effect on the lack of information category; and the least effect on the lack of readiness category. The subcategories lack of information about the career decision-making process and lack of information about the self, reported larger effect sizes compared to the other subcategories. These results are consistent with those of Reese and Miller (2006) who reported the greatest reduction in difficulties in the lack of information category. Thus, the third hypothesis was partially supported.

Finally, the results show that of the three constructs investigated, gender differences were observed for career indecision and with males exhibiting greater levels of indecision, and to some extent, a lack of readiness, than females. Although significant differences in indecision were observed between male and female students prior to the intervention, these differences disappeared after the intervention suggesting that the intervention had a greater impact on males in reducing career indecision. The results also showed that prior to the intervention, male students displayed greater difficulties in terms of lack of motivation than female students, but these were also no longer significant by Time 4. The significant differences in career indecision and readiness between males and females at the outset of the course contradicts earlier research which seems to suggest that gender is not related to career indecision (Neice & Bradley, 1979; Lunneborg, 1975; Osipow, 1990; Taylor & Pompa, 1990) and more recent research by Zhou and Santos (2007) who reported that British female students experienced higher levels of decision-making difficulties compared to males, although no significant differences were found for Chinese students. Research has suggested however that gender differences in the decision making process may be attributed to some other cultural variable (Mau, 2000). Although the present findings on gender are somewhat in contradiction to previous research examining gender differences, we argue, to some extent, it is less important whether such differences exist at the outset but whether such differences can be minimised through effective career interventions. In a patriarchal collectivist society such as Malaysia however (Bochner, 1994), male students may experience greater pressure to choose courses and careers in the sciences and technology fields,

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resulting in a greater lack of readiness, specifically in the area of motivation, in making career decisions. Therefore a main contribution of the present study to intervention research concerning gender is that it is crucial to take into consideration the specific concerns of male and female students in order to provide the help they need.

Conclusion

A primary strength of this study is the application of a theoretically robust and carefully executed intervention employing a longitudinal design and a quasi-comparison group. . The findings provide evidence that a careers course based on Crites' (1978) model of career maturity, and that incorporates Bandura's four sources of information through which self-efficacy is modified is indeed effective in increasing CDSE, and reducing career indecision and CDD. The findings also suggest that interventions that address Malaysian students' unique challenges such as cultural-values conflict and strategies that assist them in handling parental expectations are particularly relevant to this population. The intervention has provided a model on which future interventions for Southeast Asian college students can be based, which can be adapted to suit different populations and age groups. The intervention fulfils a much needed gap in the market as a viable careers intervention for college students in Malaysia, where such empirically-tested interventions are not yet available.

The present study shows that male students had significantly higher levels of career indecision compared to female students prior to the intervention but the intervention was able to minimize these differences, but also suggests that the intervention may have affected male and female students differently. The implication of this finding is that course developers need to include opportunities in interventions to deal with specific issues concerning male and female students. In Malaysia, where the participation of women in the economy in general, and in engineering and scientific roles specifically, remain low, there is a need for career interventions to inspire female students to consider non-traditional careers. On the other hand, career

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interventions should also encourage male students to explore career opportunities in fields beyond science and engineering. Therefore, with adequate preparation and planning, career interventions have the potential to eliminate gender differences and bias towards certain careers for both male and female students.

Although the results of this study are encouraging, there are several limitations. Firstly, participants were not randomly assigned to intervention and comparison groups, thereby increasing the possibility that the groups were not equivalent and there was a self-selection bias. However, we feel that the bias is minimal because students in the comparison group had the same opportunity to attend the course but were unable to do so because of clashes in their timetable. Moreover, because comparison and intervention groups displayed equivalence in CDSE, CDD and career indecision, prior to the intervention, and significant differences between the groups were found post-intervention, one can be reasonably certain that the changes in the three constructs were the result of the intervention. Secondly, the objectives of the course were extensive, and as such, may not have been addressed adequately in the course. Given the eight-hour time limit for the course, it was felt that certain activities had to be rushed through and that more time should be allocated for discussion of career decision-making issues that were pertinent to students, and for reflection on the lessons learned so that these can be applied to their own situations. The course could be further improved by including activities that would make a difference in reducing difficulties such as lack of motivation which might hinder students from progressing in their career decision-making journey. Finally, the sample consisted primarily of students in two pre-university colleges, and as such the findings of this study cannot be generalized to include all college students in Malaysia. Furthermore, these students were at the beginning of their pre-university studies and may therefore be less ready to make career decisions. By using a different sample of college students at different stages of their pre-university studies, future researchers may better examine the effectiveness of the careers intervention.

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Table 1

Contents of the course and the sessions and activities that integrate Crites' (1978) Career Maturity Theory, Bandura's (1986) four sources of information and Brown and Krane's (2000) five critical components.

Session	Topic	Activities	Take-home activity	Crites' (1978) Career Maturity Theory	Bandura's (1986) four sources of information	Brown and Krane's (2000) five critical ingredients
1	My identity and motivation	Personal values card sort; Q&A on interests; skills checklist; career genogram	Jung Typology Test	(a) Accurate self-appraisal	(a) Performance accomplishments; (c) Verbal persuasion	(a) Workbook and written exercises (b) Individualized interpretations and feedback
2	The world of work	Self-directed Search; Q&A on people, environments and lifestyles; ranking of work values, identify resources for job search and information	Informational interviews	(b) Gathering occupational information	(b) Vicarious experiences; (c) Verbal persuasion	(a) Workbook and written exercises (b) Individualized interpretations and feedback (c) World of work information
3	Targets and plans	Career fantasy; career timeline; short-term and long-term goals; action planning, going to university; getting a scholarship	Personal statement	(c) Goal selection (d) Making plans for the future	(a) Performance accomplishments; (c) Verbal persuasion	(a) Workbook and written exercises (b) Individualized interpretations and feedback
4	Problem-solving and decision-making	Case study on problem-solving; problem-solving process; decision-making ideas; handout on role models	Reflection on lessons and activities	(e) Problem-solving	(d) Physiological and emotional states; (c) Verbal persuasion	(a) Workbook and written exercises (d) Modelling (e) Attention to building support

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Table 2

Pre (T1)- and post (T4)-test scores for CDSES-SF and its five subscales for the intervention and comparison groups, and interaction effects.

CDSE- SF		Intervention		Comparison		<i>F</i>	<i>p</i>	partial η^2
		M	SD	M	SD			
Self-Appraisal	Pre	3.34	0.71	3.42	0.66			
	Post	3.87	0.66	3.40	0.67	36.01	.000	.14
Occupational Information	Pre	3.48	0.65	3.53	0.68			
	Post	3.78	0.65	3.31	0.67	35.37	.000	.14
Goal Selection	Pre	3.14	0.85	3.31	0.78			
	Post	3.78	0.69	3.34	0.70	31.47	.000	.13
Planning	Pre	3.10	0.69	3.22	0.77			
	Post	3.58	0.62	3.06	0.69	50.25	.000	.19
Problem-solving	Pre	3.15	0.67	3.10	0.67			
	Post	3.64	0.68	3.06	0.67	31.75	.000	.13
Total score	Pre	3.24	0.56	3.32	0.59			
	Post	3.73	0.55	3.23	0.59	60.14	.000	.22

Note. The interaction effects for group x time for the CDSE-SF subscales and total scores for intervention and comparison groups were statistically significant for all five subscales and the total scale.

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Table 3

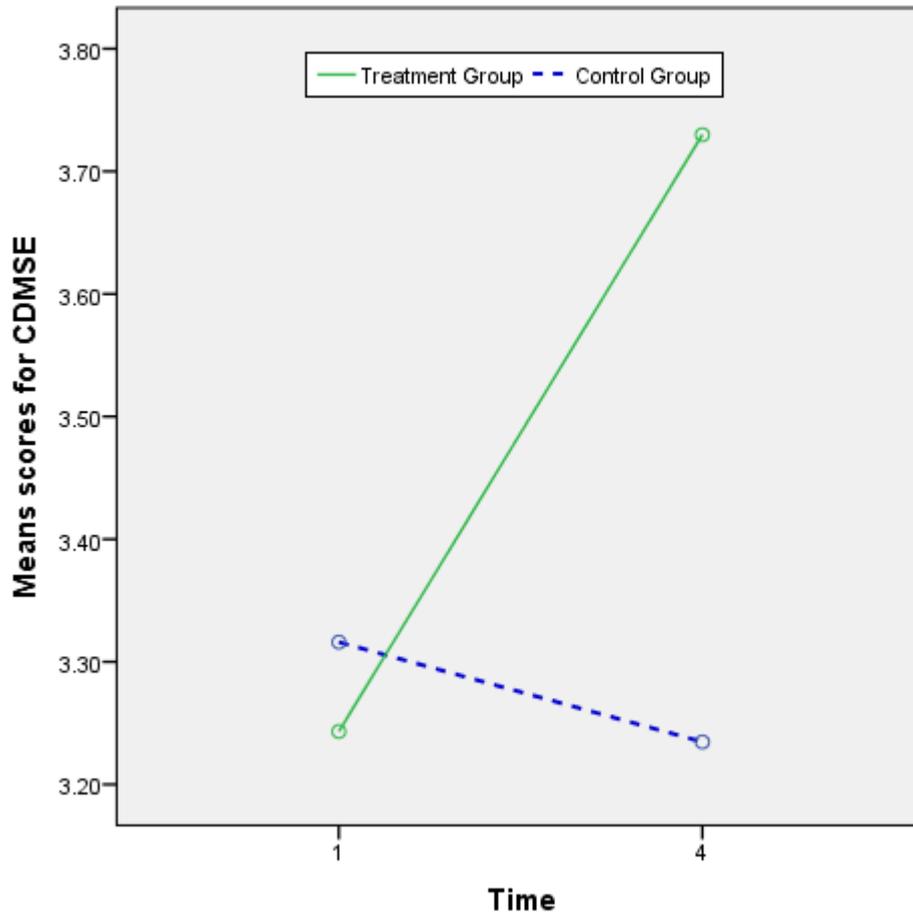
Pre- and post-test scores for the CDDQr total, main and subcategories for the intervention and comparison groups, and interaction effects

CDDQr		Intervention		Comparison		F	p	partial η^2
		M	SD	M	SD			
Lack of Readiness	Pre	5.10	1.00	5.01	1.10	21.69	.000	.09
	Post	4.44	1.16	5.07	1.19			
Motivation	Pre	3.48	1.59	3.57	1.75	12.56	.000	.05
	Post	3.25	1.73	4.20	1.77			
General Indecisiveness	Pre	6.43	1.77	6.56	1.59	4.04	.046	.02
	Post	5.65	1.88	6.22	1.78			
Dysfunctional Beliefs	Pre	5.31	1.56	4.93	1.62	11.48	.001	.05
	Post	4.43	1.75	4.86	1.51			
Lack of Information	Pre	5.43	1.83	5.35	1.98	31.13	.000	.12
	Post	3.75	1.76	5.06	1.96			
CDM Process	Pre	5.39	2.11	5.34	2.15	28.49	.000	.12
	Post	3.41	1.90	4.98	2.20			
Self	Pre	5.45	2.15	5.28	2.28	29.01	.000	.12
	Post	3.60	1.94	4.91	2.16			
Occupations	Pre	5.48	2.20	5.51	2.18	12.94	.000	.06
	Post	4.21	2.10	5.34	2.10			
Additional Information	Pre	5.37	2.09	5.27	2.26	17.18	.000	.07
	Post	3.86	2.08	5.07	2.14			
Inconsistent Information	Pre	4.74	1.50	4.43	1.58	38.97	.000	.10
	Post	3.60	1.80	4.55	1.77			
Unreliable Information	Pre	4.79	1.81	4.53	1.92	26.57	.000	.11
	Post	3.43	1.97	4.67	1.96			
Internal Conflicts	Pre	4.78	1.72	4.57	1.82	22.15	.000	.09
	Post	3.79	2.00	4.68	1.88			
External Conflicts	Pre	4.59	2.56	3.91	2.27	20.41	.000	.09
	Post	3.36	2.14	4.06	2.19			
Total Scale	Pre	5.11	1.20	4.96	1.36	47.62	.000	.18
	Post	3.92	1.41	4.90	1.50			

Note: The interaction effects for group x time for the CDDQr total, main, and subcategory scores for intervention and comparison groups were statistically significant.

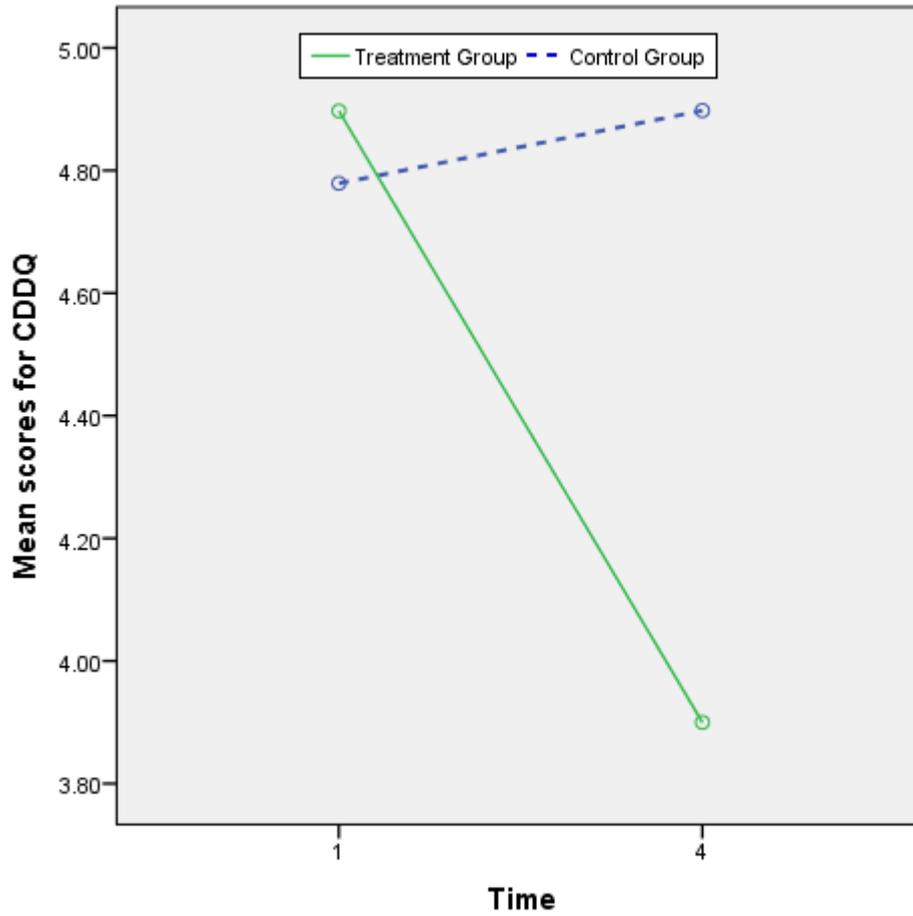
IMPACT OF A CAREER INTERVENTION PROGRAM

Figure 1. Significant interaction effects of group and time on CDSE where CDSE increased significantly for the intervention group.



IMPACT OF A CAREER INTERVENTION PROGRAM

Figure 2. Significant interaction effects of group and time on career decision-making difficulties where career decision-making difficulties decreased significantly for the intervention group.



IMPACT OF A CAREER INTERVENTION PROGRAM

Figure 3. Significant interaction effects of group and time on career indecision where career indecision decreased significantly for the intervention group.

