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What is This?

Linking Socioeconomic Status to Social Cognitive Career Theory Factors: A Partial Least Squares Path Modeling Analysis

Jie-Tsuen Huang[1] and Hui-Hsien Hsieh[2]

Abstract

The purpose of this study was to investigate the contributions of socioeconomic status (SES) in predicting social cognitive career theory (SCCT) factors. Data were collected from 738 college students in Taiwan. The results of the partial least squares (PLS) analyses indicated that SES significantly predicted career decision self-efficacy (CDSE); however, the relationship between SES and career decision-making outcome expectations (CDMOE) was not significant. In addition, the findings revealed that CDSE had a direct effect as well as an indirect effect, via CDMOE, on career exploratory intentions. Implications for counseling and future research are discussed.

Keywords

socioeconomic status, career decision self-efficacy, career decision-making outcome expectations, career exploratory intentions, partial least squares

The career decision-making process of adolescents is often considered a family matter in Chinese culture. Leong (1993) asserted that young Asian Americans may choose a career or an occupation in consideration of their own interests as well as their parents' acceptance in order to carry on family traditions and fulfill the expectations of their parents. Several studies have demonstrated that parental influences and family structural variables such as family socioeconomic status (SES) play a crucial role in adolescents' career development. For example, Trusty (1998) indicated that SES is strongly related to educational expectations of late adolescents. Trusty, Ng, and Plata (2000) reported SES to be an important predictor of the selection of college major (using Holland's taxonomy) among undergraduate students. Blustein et al. (2002) found that participants with higher SES reported more vocation-related support from parents than did the lower SES participants.

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[1]Department of Human Resource Development, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan
[2]Department of Management Science, National Chiao Tung University, Hsinchu, Taiwan

Corresponding Author:
Jie-Tsuen Huang, Department of Human Resource Development, National Kaohsiung University of Applied Sciences, 415 Chien Kung Road, Kaohsiung 807, Taiwan, Republic of China
Email: vivian@cc.kuas.edu.tw

Additionally, Ali and Saunders (2009) found that SES explained significant variance in the career aspirations of Rural Appalachian high school students. Despite the importance of SES in adolescents' career development, Fitzgerald and Betz (1994) indicated that there is a dearth of research investigating how SES influences adolescents' career development in the counseling psychology literature. Blustein (2001) also advocated that more research is needed to address how social class functions in adolescents' vocational development.

Lent, Brown, and Hackett's (1994, 2000) social cognitive career theory (SCCT) has illustrated various mechanisms through which specific factors can systematically influence the career development of adolescents, and constitutes a useful theoretical framework upon which the role SES plays in adolescents' career development can be investigated. The SCCT encompasses three interrelated career development models of academic/career interest, choice, and performance, and hypothesizes that personal, contextual, and social cognitive factors determine one's development of academic/career interests, choice goals/intentions, and career-related behaviors. According to the SCCT model, personal factors are distal variables that influence one's career interests, career goals, and career-related behaviors indirectly through individuals' social cognitive mechanisms. In particular, SES has been considered as one of the personal factors (e.g., sex and ethnicity/race) that have an impact on the development of individuals' self-efficacy beliefs and outcome expectations via shaping one's learning experiences. In turn, self-efficacy beliefs and outcome expectations may then have an effect on individuals' career interests, career goals/intentions, and career-related behaviors.

In a recent study, Ali, McWhirter, and Chronister (2005) adopted the theoretical framework of SCCT to examine the effects of SES on social cognitive variables in a sample of lower SES background, ninth-grade students, and reported that SES significantly correlated with vocational/educational self-efficacy ($r = .24$, $p < .05$) and vocational outcome expectations ($r = .22$, $p < .05$). However, in their subsequent regression analyses, Ali et al. (2005) did not find significant causal relationships between SES and vocational/educational self-efficacy or vocational outcome expectations. Ali et al. (2005) further explained that the lack of predictive utility of SES may possibly be due to the way SES was assessed. Indeed, SES has been operationalized in various ways in the literature. For example, Lorant et al.'s (2003) meta-analysis suggested that SES is commonly composed of one's education, occupation, and income. Similarly, Gallo and Matthews (2003) also defined SES as an aggregate of resources and prestige that could be measured through education, occupation, and income. Liu, Ali, et al.'s (2004) content analysis indicated that the Hollingshead Four-Factor Index of Social Status (Hollingshead, 1975), which uses education, occupation, gender, and marital status to compute a score, was one of the most popular methods for measuring SES.

Liu, Soleck, Hopps, Dunston, and Pickett (2004) have mentioned that the mixed results in the relationship of SES and individuals' career development are due to inconsistencies in measuring SES. Notwithstanding that the nature of SES as a latent construct composed of a combination of multiple indicators (e.g., education, occupation, and income) is generally recognized, one critical question remains unanswered. That is, what is the most appropriate measurement model specification (reflective or formative specification) of SES? This clarification is very important since MacKenzie, Podsakoff, and Jarvis (2005) have demonstrated that measurement model misspecification can sometimes bias estimates of the structural relationships between constructs, and lead to Type I and/or Type II errors of inference in hypothesis testing.

With regard to this issue, Diamantopoulos and Winklhofer (2001) argued that the most appropriate measurement model of SES should be specified as a formative-indicator construct. They proposed that the criterion for distinguishing between reflective- and formative-indicator models depends upon the direction of causality between the construct and its indicators. More specifically, for reflective-indicator models, the direction of causality stems from the latent construct to the indicators, and changes in the latent construct are hypothesized to cause changes in the indicators. In contrast, the causality direction of formative-indicator models flows from the indicators to the latent

construct, and changes in the indicators can lead to changes in the latent construct. In view of Diamantopoulos and Winklhofer's assertion, SES should better be specified as a formative-indicator construct with multiple indicators including education, occupation, and income because, if any one of these indicators increases, SES would increase; conversely, if one's SES increases, it would not necessarily bring changes to all of the indicators.

Purpose of the Present Study

In this article, we follow Diamantopoulos and Winklhofer's (2001) argument that SES is by its nature a formative-indicator construct. However, to our knowledge, no research to date in the career development literature has treated SES as a formative-indicator construct and examined its effects on SCCT factors. Therefore, the purpose of this study was to investigate the effects of SES on SCCT factors in a Chinese culture. Particularly, the present study specified SES as a formative-indicator construct and hypothesized that it would be predictive of college students' career decision self-efficacy (CDSE) and career decision-making outcome expectations (CDMOE). Furthermore, in accordance with SCCT (Lent et al., 1994), this study further hypothesized that both CDSE and CDMOE would have direct effects on career exploratory intentions (CEI), and CDSE would also influence CEI indirectly through CDMOE.

Method

Participants and Procedures

The participants in this study were students attending eight colleges in Taiwan. We made contact with the course instructors of the classes intended to be surveyed in advance and requested their permission to assist in conducting the questionnaire survey to students enrolled in these classes as well as collecting the completed questionnaires for the authors. Each questionnaire included a cover letter explaining the purpose of this study and emphasizing that participants were assured confidentiality and were informed that their responses would be anonymous and be used for research purposes only. Participants were asked to complete the questionnaire and return it to the instructors after class. Finally, the authors gathered all the returned questionnaires from the instructors, respectively.

A total of 1,200 questionnaires were distributed and 760 were returned. Of the 760 questionnaires, 22 were eliminated because of the large amount of missing data, yielding a valid return rate of 61.5%. Participants in this study included 350 male and 388 female college students. The mean age of the total sample was 20.23 years ($SD = 1.23$). Of the 738 surveys, 14.5% ($n = 107$) were freshmen, 30.4% ($n = 224$) were sophomores, 32.4% ($n = 239$) were juniors, and 22.8% ($n = 168$) were seniors.

Measures

SES. As defined by Gallo and Matthews (2003) and Lorant et al. (2003), SES could be measured through education, occupation, and income, and it is commonly assumed that adolescents' SES is determined by their parents' SES. Due to the privacy considerations and limitations in obtaining the precise income level of the parents, the SES of the college students in the present study was measured through four indicators: father's education, father's occupation, mother's education, and mother's occupation. Parental educational level and occupation information were obtained indirectly from college students. Response options of parental educational level were rated on a 5-point Likert-type scale (1 = *junior high school*; 2 = *high school graduate*; 3 = *partial college or specialized training*; 4 = *college education*; 5 = *graduate degree*). Response options of parental occupation were rated on a 5-point Likert-type scale (1 = *unskilled laborers, menial service*; 2 = *machine*

operators, semiskilled workers; 3 = *skilled craftsmen, clerical, sales worker*; 4 = *medium business, minor professional, technical*; 5 = *major business and professional*).

Career Decision Self-Efficacy Scale–short form (CDSE-SF). Betz, Klein, and Taylor's (1996) 25-item CDSE-SF is used to measure participants' self-efficacy for making career-related decisions. The CDSE-SF contains 5 items for each of the 5 subscales: self-appraisal (SA), gathering occupational information (GOI), goal selection (GS), planning (PL), and problem solving (PS). Sample items include "Determine what your ideal job would be" (SA), "Use the Internet to find information about occupations that interest you" (GOI), "Choose a major or career that will fit your interests" (GS), "Determine the steps you need to successfully complete your chosen major" (PL), and "Persistently work at your major or career goal even when you get frustrated" (PS). Responses were obtained using a 5-point Likert-type scale ranging from 1 (*no confidence at all*) to 5 (*complete confidence*), with higher scores indicating a higher degree of CDSE. Tansley, Jome, Haase, and Martens (2007) reported that the CDSE-SF has strong psychometric properties with an internal consistency coefficient of .91. In the current study, the Cronbach's alpha for the 25-item total CDSE-SF was .91.

CDMOE. Betz and Voyten's (1997) CDMOE scale is a 9-item measure that consists of two outcome expectation subscales: Academic and Career. The Academic Outcome Expectations (AOE; 5 items) subscale assesses personal beliefs regarding the relevance of educational performance to career options. One sample item is "If I get good grades, I will be able to have the career of my choice." The Career Outcome Expectations (COE; 4 items) subscale assesses personal beliefs about the relevance of career decision-making tasks to future career options and decisions. One sample item is "If I spend enough time gathering information about careers, I can learn what I need to know to make a good decision." Both subscales were rated on 5-point Likert-type scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating a higher degree of CDMOE. Betz and Voyten reported an internal consistency reliability coefficient of .77 for the AOE subscale and .79 for the COE subscale in an undergraduate sample. In the current study, the Cronbach's alpha was .82 for the AOE subscale and .81 for the COE subscale. The Cronbach's alpha for the 9-item total CDMOE was .85.

Career exploration intentions (CEI). Betz and Voyten's (1997) 5-item CEI scale is used to assess participants' intentions to engage in behaviors regarding making career decisions. Sample items are "I intend to spend more time learning about careers than I have been" and "I intend to get all the education I need for my career choice." Responses were obtained using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating more positive career decision-making intentions. Betz and Voyten reported an internal consistency reliability coefficient of .73 for this scale in their undergraduate sample. In the current study, the Cronbach's alpha for the CEI was .83.

Translation of Measures

Since all of the measure items of this study were in English, a back-translation procedure (Brislin, 1986) was adopted to produce a Chinese version of the measures in order to ensure semantic equivalence. The authors, both native speakers of Chinese, first translated the English version of the measures into Chinese. The Chinese version of the measures was then independently back-translated into English by two bilingual experts who are faculty of the Foreign Language Departments of two universities in Taiwan. Discrepancies between the original and the back-translated versions were discussed by the two bilingual experts and the authors, and corresponding changes were made upon agreement.

Table 1. Means, Standard Deviations, Reliability, Average Variance Extracted, and Correlations Among the Latent Constructs ($N = 738$)

Latent Constructs	M	SD	α	CR	AVE	1	2	3	4
1. SES	2.12	.77	—	—	—	—			
2. CDSE	3.60	.45	.91	.92	.71	.18**	(.84)		
3. CDMOE	3.73	.58	.85	.85	.73	.05	.47**	(.85)	
4. CEI	3.80	.61	.83	.88	.61	.06	.60**	.54**	(.78)

Note. The square root of AVE values is given in parentheses. SES = socioeconomic status; CDSE = career decision self-efficacy; CDMOE = career decision-making outcome expectations; CEI = career exploratory intentions; CR = composite reliability; AVE = average variance extracted.
**$p < .01$.

Data Analysis

In order to test the hypotheses, we conducted a partial least squares (PLS) path modeling analysis, an alternative technique for structural equation modeling (SEM), using the software of VisualPLS 1.04b1 developed by Fu (2006). Chin (1998) indicated that PLS employs a component-based approach for estimation purposes and can simultaneously handle formative- and reflective-indicator constructs in one model. In the current study, the SES was a formative-indicator construct and the others were reflective-indicator constructs; therefore, PLS was favored over other SEM techniques (e.g., LISREL, AMOS, EQS) for testing the hypothesized model. The data were analyzed in two steps. First, the reliability and validity of each measure was assessed to ensure that instruments used in this study were statistically adequate. Second, the hypothesized model itself was examined by estimating the path coefficients between the constructs and determining their significance using a bootstrap resampling method (Efron & Tibshirani, 1993) with 1,000 resamples, as well as estimating the predictive power of the model for dependent variables (R^2 value).

Results

Table 1 presents the descriptive statistics, reliabilities, average variance extracted (AVE), and correlations of the study variables. Before testing our hypotheses, we assessed the convergent and discriminant validity to assure the adequate psychometric properties of the measures used in this study. For convergent validity, all reflective-indicator constructs had composite reliability (CR) exceeding the required minimum of .70 and had AVE values greater than the required minimum of .50, providing support for the convergent validity (Fornell & Larcker, 1981). Moreover, discriminant validity was assessed via comparing the square root of the AVE values with the correlations between the latent constructs. As shown in Table 1, the square root of the AVE values was larger than all other cross correlations, providing support for the discriminant validity (Chin, 1998). In sum, the above results suggested that the psychometric properties of the measures used in this study were statistically adequate.

As expected, the results of the correlation analysis showed that CDSE and CDMOE were positively correlated with CEI ($r = .60$ and .54, all p values $< .01$). Moreover, the results showed that SES was positively correlated with CDSE ($r = .18$, $p < .01$), but no significant correlation was found between SES with either CDMOE ($r = .05$, $p > .05$) or CEI ($r = .06$, $p > .05$). Figure 1 depicts the PLS results for the hypothesized model. As shown, the factor loadings for the latent constructs of CDSE, CDMOE, and CEI were highly significant ($p < .001$). Additionally, the weights of father's education and occupation on SES were significant ($p < .05$), but the weights of mother's education and occupation on SES were not statistically significant. As for structural
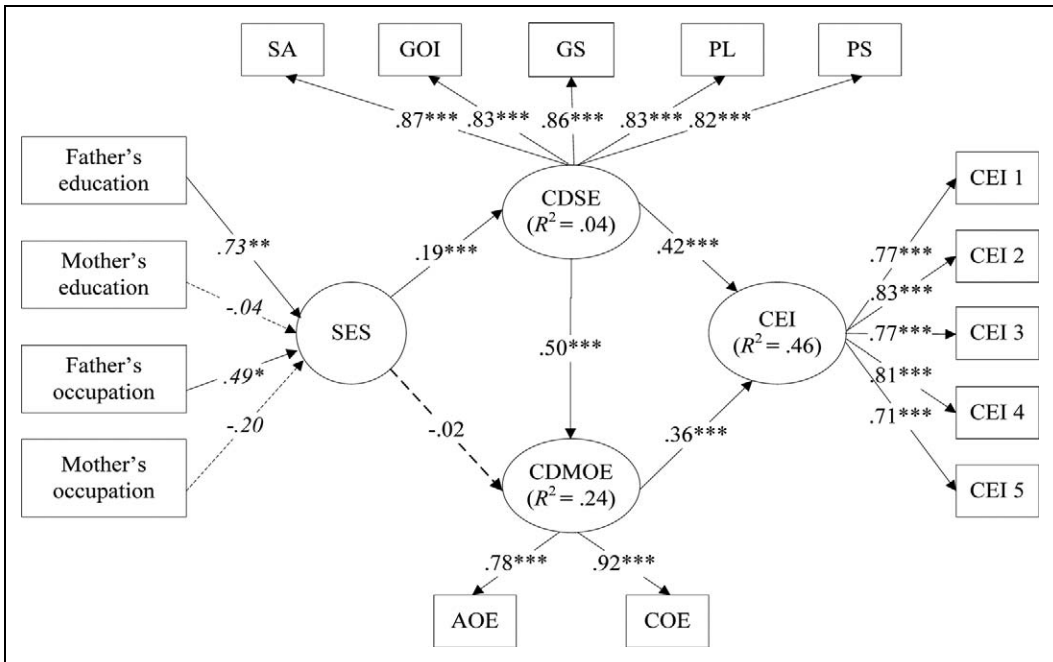
Figure 1. PLS results for the hypothesized model. *Note.* The weights of manifest indicators are shown in italic. The dotted lines indicate nonsignificant paths. SES = socioeconomic status; CDSE = career decision self-efficacy; CDMOE = career decision-making outcome expectations; CEI = career exploratory intentions; SA = self-appraisal; GOI = gathering occupational information; GS = goal selection; PL = planning; PS = problem solving; AOE = academic outcome expectations; COE = career outcome expectations. *$p < .05$. **$p < .01$. ***$p < .001$.

relationships, the results revealed that SES had a significant impact on CDSE ($\beta = .19$, $p < .001$), accounting for approximately 4% of variance in CDSE, but no significant relationship emerged between SES and CDMOE ($\beta = -.02$, $p > .05$). Further, the relationship between CDSE and CDMOE was statistically significant ($\beta = .50$, $p < .001$), accounting for approximately 24% of variance in CDMOE. Finally, CDSE and CDMOE are both significant predictors of CEI ($\beta = .42$ and .36, all p values $< .001$), accounting for 46% of variance in CEI.

Furthermore, an additional analysis was conducted to investigate whether the structural relationships in our model hold for different genders. The respondents were thus divided into the male ($n = 350$) and female ($n = 388$) subsamples, and then the PLS path modeling analysis was repeated. The analysis revealed that consistent structural patterns were found in each gender subsample, indicating all significant path relationships between the constructs except the one linking SES to CDMOE. However, the SES–CDSE relationship was stronger in the female subsample ($\beta = .26$, $p < .001$), accounting for approximately 7% of variance in CDSE, than it was in the male subsample ($\beta = .13$, $p < .05$), accounting for approximately 2% of variance in CDSE. Though gender difference was not the focal concern of this study, the results of the additional analysis imply a direction for further exploration of the potential interaction effects between SES and gender on CDSE.

Discussion

This study investigated the contributions of SES in predicting the SCCT factors in a Chinese culture. The results of the PLS path modeling analyses indicated that SES significantly predicted CDSE;

however, the relationship between SES and CDMOE was not significant. Also, the results revealed that CDSE had a direct effect as well as an indirect effect, via CDMOE, on CEI. Overall, the above results largely supported the utility of the SCCT.

Our results showed that father's education and occupation significantly predicted SES; however, mother's education and occupation did not add to the prediction of SES. This suggests that fathers play a more salient role in determining household SES backgrounds than do mothers; meanwhile, it partially reflects the fact that men in a traditionally male-dominated Chinese society may have more opportunities and resources than women to acquire higher education and occupational prestige which, in turn, contribute more to a family's SES.

As expected, our results revealed that SES significantly predicted CDSE. This finding responds to Lent et al. (2000), who acknowledged that personal factors such as SES have the potential to greatly influence an individual's career development, but is contrary to the results of Ali et al. (2005), who found that SES was not a significant predictor of vocational/educational self-efficacy. The plausible explanations for the inconsistent findings of this study and those of Ali et al.'s (2005) are twofold. The first possible reason is due to the difference in sample size. In their work, Ali et al. (2005) examined the SES–vocational/educational self-efficacy relationship with a small sample size of 77. Maxwell, Kelley, and Rausch (2008) have claimed that sample size is in relation to sampling errors which, in turn, can cause errors in parameter estimation. In other words, the larger the sample size is, the smaller the sampling error will be, and thus can eventually strengthen the statistical power of parameter estimation in regression analysis. Thus we examined the SES–CDSE relationship with a larger sample size of 738 in order to provide a more solid foundation for the statistical power.

The second potential reason is related to the methodological issues of how SES was measured and causal relationships tested. Ali et al. (2005) adopted the Hollingshead Four-Factor Index to calculate a score of SES, and then tested the effects of SES on vocational/educational self-efficacy through hierarchical regression analyses. Nevertheless, Fassinger (1987) highlighted that SEM is a more powerful analytical technique since it has strengths in constructing unobservable variables as well as explicitly modeling measurement errors for the manifest variables, enabling researchers to test theories more precisely and gain a more thorough explanatory understanding of their empirical data (Hughes, Price, & Marrs, 1986). Thus we specify SES as a formative-indicator construct and utilize PLS path modeling to examine its effects on SCCT factors. We believe our study may report more valid and credible results, and the significant SES–CDSE relationship suggests that college students' self-efficacy beliefs for making career-related decisions can be determined by their own family SES background.

Consistent with SCCT tenets (Lent et al., 1994, 2000) and previous studies (e.g., Betz & Voyten, 1997; Ochs & Roessler, 2004), the results indicated that CDSE exhibited a more powerful influence on CEI than did CDMOE. In addition to direct effects, CDSE also predicted CEI indirectly through CDMOE. However, the results of this study did not support the SES–CDMOE relationship. One potential explanation is that the components of SES in this study are limited and have minor predictive validity, which may not adequately represent the extent of SES, and thereby, in turn, may underestimate its impact on CDMOE. Another plausible explanation is that a personal factor such as SES is a distal antecedent of social cognitive factors, and its effects on CDSE and CDMOE are probably mediated by individuals' learning experiences (Lent et al., 1994, 2000). In order to verify our explanations, future research could collect additional measurement indicators of SES and further investigate the mediating mechanism of the SES–CDSE/CDMOE relationship.

The results of this study have practical implications for the career development process of college students. The study supports that social cognitive factors stand for the key components in determining college students' CEI. Career counseling interventions should place more emphasis on strengthening individuals' social cognitive beliefs, especially targeting college students' CDSE since it plays a crucial role in CEI as well as in CDMOE. For example, career counselors can

implement relevant counseling interventions to assist low-CDSE students, such as guiding students in how to gather more occupational information about the world of work, or providing students with opportunities to perform ordinary career-related tasks successfully, in order to help students with low-CDSE obtain a sense of mastery and self-confidence in their ability to complete specific career-related tasks.

A few limitations of this study should be noted. First, the cross-sectional nature of this study precludes the extent to which cause–effect relationships can be inferred from the findings; thus, the explanation of the results should still be made with caution. Second, because the data were collected in Taiwan, the cross-cultural generalizability of the results may be a concern. Future research could replicate the present findings with samples from Western societies, which can provide direct evidence of and increased confidence in the generalizability of the findings across cultures. Finally, this study simply adopted parents' education and occupation as manifest indicators for measuring SES. This limitation raises a concern as to whether these indicators can sufficiently represent the adolescents' actual SES. Additional follow-up studies can include other measurement indicators (e.g., neighborhood context and parents' income level) to constitute the measure of SES.

Future research may aim at exploring the relationship between SES and other vocational/educational psychology constructs. As suggested by Brown, Fukunaga, Umemoto, and Wicker (1996), future research should "examine the relation between social class and a wider range of career choice behaviors" (p. 172). Also, a few studies have demonstrated that SES is related to career aspirations (Ali & Saunders, 2009), vocational expectations (Diemer & Hsieh, 2008), educational expectations (Trusty, 1998), and choice of college major (Trusty et al., 2000). Thus, we encourage future researchers to use PLS path modeling to reexamine the relationship between SES and these constructs in order to better address the issue of SES in the career development literature.

Declaration of Conflicting Interests

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