

A Study of the College Self-Efficacy Inventory and Its Impact on University Students' Academic Success

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ABSTRACT

The purpose of this study was to apply the College Self-Efficacy Inventory (CSEI) scale to measure the social and psychological factors on Indian students. The major research question of the study is to answer whether the CSEI scale fit the data. Our study supports Barry et al. (2009).

The other purpose of the research was to know the impact of CSEI factors on Indian student's academic success. The sample of the study is 141 in BBA and B.Com (H) first year in affiliated college of Guru Gobind Singh Indraprastha University Delhi. Path analysis has been used in the study to examine the interrelationship between course-roommate-social-social integration self-efficacy. To analyse the data correlation, inter-correlation, CFI, RMSEA, Cronbach alpha, regression weights, Durbin – Watson test etc. has been used. The study found affirmative steps in collecting validity evidence for the CSEI scale as well as found significant inter-relationship between course-roommate-social integration-social self-efficacy of Indian undergraduate students. It has been also found that CSEI scale can be used to measure college self- efficacy for the broader college experience of Indian students. Our study indicates that a CSEI factor has statistically significant impact on the student's academic success.

Keywords: Self – efficacy, CSEI, students, Academic Success, relationship

INTRODUCTION

Due to increased complexities in the environment student adjustment process has attained importance for increasing student's satisfaction. The process has been explored in different settings such as social, academic, psychosocial, motivational and behavior. Among all these variables one concept that has received considerable interest in the domain of college student adjustment is self-efficacy to organize and execute courses of action required to attain designated types of performances (Bandura, 1986, p. 391).

Human behavior is controlled by the self-influence mechanism. Among the self _influence mechanisms, the belief of personal self-efficacy is more important and comprehensive than the others (Bandura, A., 1997). Self-efficacy, rooted in Bandura's social-cognitive theory (Bandura, 1986), is related to a number of educational and psychological constructs. As detailed by socio-cognitive theory, efficacy beliefs attached with goal are able to improve the motivation and performance by increasing the efforts and determination (Bandura, 2001). The high self-efficacy associates with embarking on higher levels of goals over time (Locke & Latham, 1990). Self-efficacy is observed as a one's perception of his or her capabilities to attain a specific goal or task (Bandura, 1993, 2000). The individual who has high self _efficacy, carries high anticipation for success. The person with low self-efficacy is uncertain about one's capabilities. The person who is uncertain about his abilities, the chances of attaining success would be law. Due to their success expectation the high self-efficacy

individuals, try very hard and look at the problem as a struggle not as a threat and they always actively look for new circumstances. These people are more confident about their capabilities than the people who have low self-efficacy (Liaw, 2009).

It has been suggested that self-efficacy is not only important for academic and social adjustment but also for student's well-being and personal adjustment (Solberg & Villareal, 1997, DeWitz & Walsh, 2002; Gore, 2006). It has been found that the person who have low self _efficacy are more stressful and perceive the duties and jobs more tough, whereas the person who have high self _efficacy are more cool and talented. Hence, self-efficacy can be one of the strong predictor for one's accomplishment (Pajares, 2002).

Students who have high self _efficacy are more successful as they are good in learning than those who have low self _efficacy (Pajares & Schunk, 2002). The studies show that academic success is effected by environment, learning method, knowledge structures and motive orientation (Brunsteim & Mayer, 2005).

It has been found that student who have high self _efficacy try hard and spend more time to get better grades (Scharff, 1997). Development is the most important drive in educational psychology and all the researches about this subject are a struggle to improve students' academic achievement; it has the most applications in education (Moosavirad, 2003). Self-efficacy has been related with motivational concepts such as persistence and goals/goal setting (Multon, Brown, & Lent, 1991; Schunk & Ertmer, 1999), self-regulated learning (Pintrich & DeGroot, 1990), actual achievement (Pajares & Miller, 1995), and stress, distress and anxiety (Finney & Schraw, 2003; Solberg & Villareal, 1997). One important character of self-efficacy is that it is domain specific; that is, self-efficacy judgments are specific to certain tasks in certain situations (Bandura, 1977, 1986, 1997). Researches have shown when the specificity of the efficacy assessment and the criterion matches there is the strongest link between self-efficacy and outcomes (Pajares & Miller, 1995; Choi, 2005).

Self-efficacy has been studied within a variety of specific domains such as academic, social, career, clinical, athletics, and health areas (Bandura, 1997). The most important elements in academic achievement are a long time challenges with learning and having obligation and motivation for learning process (Ames 1990). Self-efficacy in the academic domain has been widely studied with college students with college-aged populations because both are integral components of the college experience (Bandura, 1997). It has been found that personal satisfaction and self-confidence affect one's learning and academic achievement (Whitehead, 2003, Wang & Guthrie, 2004). There is a relationship between student's self-efficacy and their academic achievements there is a relationship (Asgharnezhad, 2004; Arabian, 2004).

It has been demonstrated that self-efficacy is the most important component for forecasting educational performance and the aspects of cognitive perceptions' beliefs through self – efficacy (Seif & Diba, 2008).

It has been found that academic achievements can be enhance by increasing their self-efficacy through applying training methods and enriching educational environments (Jahanian & Mahjoubi, 2013). Recently, a new domain of self-efficacy beliefs called as college self-efficacy has been proposed for the students that are the degree of confidence, students have for completing college-related tasks (Barry & Finney, 2007).

Few scales have been developed to measure general self- efficacy like academic Self-Confidence subscale of the Student Readiness Inventory (ASC; Le, Casillas, Robbins, & Langley, 2005) and the College Academic Self-efficacy Scale (CASES; Owen & Froman, 1988) are the few illustrations of general measures. The CSEI scale (Solberg et al, 1993) was

developed in order to explore the role of self-efficacy in the college adjustment. College self-efficacy inventory scale (CSEI) has been applied to establish a retention strategy for freshmen Afro -American. Course self-efficacy, Roommate self- efficacy, Social self-efficacy and Social Integration Self efficacy were four psychosocial factors that were analyzed and found that these factors have been associated with student's retention and academic achievements (Dauvell, 2013).

PURPOSE OF THE STUDY

The present study is conducted with the aim of exploring the rate of College self-efficacy's inventory and its impact on students' academic success in university. The major purpose of the study is to answer “Is the College Self-Efficacy Inventory scale adequate the data?” The further purpose of the research was to examine the interrelationship between course self-efficacy, roommate self-efficacy, social self-efficacy, Social integration self-efficacy and academic achievement with undergraduate students. The goal was to explore the applicability of College Self efficacy Inventory Scale (CSEI) on Indian students. From the previous studies, it has been found that CSEI is applied with Hispanic students, Afro- American, Turkish students etc. but not yet examined specifically with Indian students. This research would be useful in assessing and investigating the psychosocial factors of the Indian student. The emphasis of research was to assess college self-efficacy, or “the degree of confidence students have in their ability to successfully perform a variety of college-related tasks (Solberg, 1993) and its impact on academic achievement. The CSEI would be used to measure self-efficacy for the broader college experience.

RESEARCH METHODOLOGY

The study has used CSEI scale to measure the college self-efficacy which was developed by Solberg (Solberg et al., 1998). The study specified four psychosocial factors: Course Efficacy, Roommate Efficacy, Social Efficacy & Social Integration Self-Efficacy and its impact on academic achievement. The CSEI scale consisted of 20 items with three broad categories: course self-efficacy, roommate self-efficacy, social integration self-efficacy and social self-efficacy. Course self-efficacy consists of 7items (e.g. “Participate in class discussion”). Roommate self-efficacy consists of 4 items (e.g. “Get along with others you live with”). Social self- efficacy consists of 6 items. Social integration self-efficacy consists of 3 items.Both the Roommate , Social&social integration self-efficacy subscales were social in nature, but the Roommate items were more specific to social interactions with those you live with, whereas the Social items were largely specific to social interactions in the university. CSEI scale is 10 point scale to rate the confidence. This four-factor (Solberg et al., 1998) model has been applied on Indian students. For defining the academic achievement, student's average scores (university exams) of two semesters of first year has been taken.

CSEI data and academic scores were collected from 156 undergraduate students. Cases with incomplete data and duplicate cases were removed to yield a total sample of 141.

All undergraduate students are studying in BBA and B.Com (H) first year in affiliated college of Guru Gobind Singh Indraprastha University Delhi. Convenient sampling method has been used for data collection.

To analyze the data Amos 22 and SPSS 22 software were used. Path analysis has been done in the study to examine the interrelationship between course-roommate-social self-efficacy and academic achievement. The correlations among the 20 items of CSEI scale and academic achievement have been calculated. To understand the applicability of College Self efficacy

Inventory Scale (CSEI) on India students model fit has been investigated .Comparative fit index, Root Mean Square Error of Approximation, Goodness of fit index and CMIN (minimum sample discrepancy) have been analyzed to check the model fit in the sample. Standard regression weights have been computed to check the factor loading of each item. Durbin Watson statistics used to check the problem of auto correlation among items in data. Other statistics like Mahalanobis distance (Multi- collinearity problem), Cronbach alpha (reliability of CSEI scale) etc. have been calculated to examine the sample data.

RESULTS AND ANALYSIS

Correlation has been investigated to measure the strength and direction of the linear relationship between 20 items.

Table 1. Correlation Matrix

| CORRELATION Matrix B/W 20 Items | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ITEMS | CSE1 | CSE2 | CSE3 | CSE4 | CSE5 | CSE6 | CSE7 | RSE1 | RSE2 | RSE3 | RSE4 | SSE1 | SSE2 | SSE3 | SSE4 | SIS1 | SIS2 | SSE7 | SIS3 | SSE9 |
| CSE1 | 1.000 | .637 | .615 | .553 | .557 | .620 | .515 | .613 | .475 | .649 | .451 | .587 | .497 | .673 | .565 | .516 | .547 | .572 | .715 | .618 |
| CSE2 | .637 | 1.000 | .719 | .602 | .571 | .539 | .536 | .610 | .590 | .666 | .565 | .612 | .477 | .646 | .538 | .494 | .465 | .579 | .651 | .560 |
| CSE3 | .615 | .719 | 1.000 | .610 | .680 | .720 | .679 | .694 | .674 | .746 | .588 | .717 | .579 | .582 | .488 | .617 | .626 | .625 | .600 | .616 |
| CSE4 | .553 | .602 | .610 | 1.000 | .541 | .651 | .618 | .696 | .539 | .669 | .365 | .571 | .591 | .564 | .465 | .545 | .712 | .590 | .496 | .506 |
| CSE5 | .557 | .571 | .680 | .541 | 1.000 | .734 | .578 | .688 | .643 | .681 | .481 | .779 | .497 | .610 | .572 | .555 | .516 | .563 | .577 | .557 |
| CSE6 | .620 | .539 | .720 | .651 | .734 | 1.000 | .692 | .676 | .592 | .746 | .479 | .717 | .627 | .568 | .532 | .595 | .670 | .557 | .558 | .556 |
| CSE7 | .515 | .536 | .679 | .618 | .578 | .692 | 1.000 | .634 | .523 | .688 | .323 | .680 | .696 | .509 | .470 | .598 | .697 | .622 | .474 | .483 |
| RSE1 | .613 | .610 | .694 | .696 | .688 | .676 | .634 | 1.000 | .590 | .676 | .518 | .729 | .680 | .608 | .508 | .649 | .705 | .712 | .629 | .639 |
| RSE2 | .475 | .590 | .674 | .539 | .643 | .592 | .523 | .590 | 1.000 | .638 | .618 | .614 | .486 | .520 | .446 | .516 | .522 | .563 | .515 | .558 |
| RSE3 | .649 | .666 | .746 | .669 | .681 | .746 | .688 | .676 | .638 | 1.000 | .468 | .772 | .659 | .661 | .634 | .621 | .669 | .571 | .717 | .645 |
| RSE4 | .451 | .565 | .588 | .365 | .481 | .479 | .323 | .518 | .618 | .468 | 1.000 | .441 | .279 | .432 | .445 | .404 | .331 | .377 | .447 | .495 |
| SSE1 | .587 | .612 | .717 | .571 | .779 | .717 | .680 | .729 | .614 | .772 | .441 | 1.000 | .596 | .644 | .508 | .656 | .600 | .650 | .666 | .617 |
| SSE2 | .497 | .477 | .579 | .591 | .497 | .627 | .696 | .680 | .486 | .659 | .279 | .596 | 1.000 | .477 | .547 | .604 | .772 | .650 | .447 | .571 |
| SSE3 | .673 | .646 | .582 | .564 | .610 | .568 | .509 | .608 | .520 | .661 | .432 | .644 | .477 | 1.000 | .640 | .526 | .495 | .577 | .760 | .562 |
| SSE4 | .565 | .538 | .488 | .465 | .572 | .532 | .470 | .508 | .446 | .634 | .445 | .508 | .547 | .640 | 1.000 | .496 | .496 | .487 | .546 | .511 |
| SIS1 | .516 | .494 | .617 | .545 | .555 | .595 | .598 | .649 | .516 | .621 | .404 | .656 | .604 | .526 | .496 | 1.000 | .702 | .647 | .640 | .667 |
| SIS2 | .547 | .465 | .626 | .712 | .516 | .670 | .697 | .705 | .522 | .669 | .331 | .600 | .772 | .495 | .496 | .702 | 1.000 | .710 | .518 | .607 |
| SSE7 | .572 | .579 | .625 | .590 | .563 | .557 | .622 | .712 | .563 | .571 | .377 | .650 | .650 | .577 | .487 | .647 | .710 | 1.000 | .615 | .751 |
| SIS3 | .715 | .651 | .600 | .496 | .577 | .558 | .474 | .629 | .515 | .717 | .447 | .666 | .447 | .760 | .546 | .640 | .518 | .615 | 1.000 | .692 |
| SSE9 | .618 | .560 | .616 | .506 | .557 | .556 | .483 | .639 | .558 | .645 | .495 | .617 | .571 | .562 | .511 | .667 | .607 | .751 | .692 | 1.000 |

The study found (Table 1) that course self-efficacy (CSE 1/ CSE 4) is strongly and positively correlated (0.715/0.712) to social integrated self-efficacy (SIS 3/SIS 2). Course self-efficacy (CSE 2) is highly correlated with course self- efficacy (CSE 3) but moderately correlated with roommate, social integrated and social self-efficacy. Course self-efficacy (CSE 3/ CSE 6) is strongly correlated with one of the item of each factors of course-roommate-social (0.719-0.720-0.746-0.717/0.720-0.734-0.746-0.717). This item “Do well in your exams” is the most important parameter of college self-efficacy of the first year students. Course self -efficacy (CSE 5) is highly correlated with course self- efficacy (CSE 6) and social self -efficacy (SSE 1). Course self -efficacy (CSE 7) and Roommate self – efficacy (RSE 2) is moderately

correlated with all other 19 items. Roommate self- efficacy (RSE 1) is directly correlated with social and social integrated factors (SSE1-0.729/ SIS2-0.705/ SSE7-0.712). Roommate self –efficacy (RSE 3) is strongly correlated with all other factors course (CSE 3& CSE 6), social integrated (SIS 3) and social factors (SSE 1). Roommate self –efficacy (RSE 4) is poorly correlated with other factors. All items of social integrated and social self-efficacy factors are inter-correlated with each other {example: social integrated self- efficacy SIS2 is positively and strongly correlated with social self- efficacy SSE 5 (0.702) and SSE 7 (0.710)}. The study also illustrates that the 20 items taken in CSEI scale have positive correlation among them (Table 1).

Table 2. Relationship between course self-efficacy and academic success

| <i>Variable</i> | <i>Numbers(N)</i> | <i>Correlation Coefficient</i> | <i>Impact Factor (R2)</i> | <i>Level of Significance</i> |
|-----------------|-------------------|--------------------------------|---------------------------|------------------------------|
| 1. CSE1 | 139 | 0.69 | 0.48 | 0.00 |
| 2. CSE2 | 139 | 0.77 | 0.59 | 0.00 |
| 3.CSE3 | 139 | 0.62 | 0.38 | 0.00 |
| 4.CSE4 | 139 | 0.75 | 0.56 | 0.00 |
| 5.CSE5 | 139 | 0.71 | 0.51 | 0.00 |
| 6. CSE6 | 139 | 0.72 | 0.52 | 0.00 |
| 7. CSE7 | 139 | 0.76 | 0.58 | 0.00 |

The results demonstrated in Table (2) reveals that the correlation between students' Course Self-Efficacy and their academic success is very strong and positive. Correlation coefficient value ranges from 0 .62 to 0.77. The analysis shows the highest correlation between CSE2 (item name: do well in your exams) and academic success. It means by increasing the rate of Course Self-Efficacy, the rate of academic achievement will be enhanced, too. The significant level of these two variables shows that there is a significant relation with 95% confidence between them (P=0.00<0.05). Therefore, it can be concluded that there is a positive and significant relationship between course self-efficacy and academic success.

Table 3. Relationship between social self-efficacy and academic success

| <i>Variable</i> | <i>Numbers(N)</i> | <i>Correlation Coefficient</i> | <i>Impact Factor (R2)</i> | <i>Level of Significance</i> |
|-----------------|-------------------|--------------------------------|---------------------------|------------------------------|
| 1. SSE1 | 139 | 0.72 | 0.52 | 0.00 |
| 2.SSE2 | 139 | 0.75 | 0.56 | 0.00 |
| 3.SSE3 | 139 | 0.71 | 0.50 | 0.00 |
| 4. SSE4 | 139 | 0.73 | 0.53 | 0.00 |
| 5. SSE7 | 139 | 0.52 | 0.27 | 0.00 |
| 6.SSE9 | 139 | 0.65 | 0.42 | 0.00 |

The Table (3) shows that the correlation between students' Social Self-Efficacy and their academic success is very strong and positive. Correlation coefficient value ranges from 0.52 to 0.75. The results demonstrated that the lowest correlation as well as impact factor ($R^2=0.27$) between SSE7 (item name: join an intramural sports team) and academic success. It means by increasing the rate of Social Self-Efficacy, the rate of academic achievement might be increased. The significant level of these two variables shows that there is a significant relation with 95% confidence between them ($P=0.00<0.05$).

Table 4. Relationship between social integration self-efficacy and academic success

| Variable | Numbers(N) | Correlation Coefficient | Impact Factor (R ²) | Level of Significance |
|----------|------------|-------------------------|---------------------------------|-----------------------|
| 1.SIS1 | 139 | 0.71 | 0.50 | 0.00 |
| 2.SIS2 | 139 | 0.80 | 0.64 | 0.00 |
| 3.SIS3 | 139 | 0.76 | 0.58 | 0.00 |

The social integration self-efficacy has highest impact on academic success as compared to the other factors of College Self-Efficacy. Correlation coefficient value ranges from 0.71 to 0.80. It means by focusing on social integration self-efficacy factors, the rate of academic achievement will be enriched. Therefore, it can be inference that there is a positive and significant relationship among these two variables. Also the rate of social integration self-efficacy's impact factor (R^2) is 0.64. In other words, this factor (SIS2: talk to your professors) determines 64 percent of changes in students' academic success.

Table 5. Relationship between room self-efficacy and academic success

| Variable | Numbers(N) | Correlation Coefficient | Impact Factor (R ²) | Level of Significance |
|----------|------------|-------------------------|---------------------------------|-----------------------|
| 1.RSE1 | 139 | 0.69 | 0.48 | 0.00 |
| 2.RSE2 | 139 | 0.61 | 0.38 | 0.00 |
| 3.RSE3 | 139 | 0.72 | 0.52 | 0.00 |
| 4.RSE4 | 139 | 0.71 | 0.51 | 0.00 |

The Table illustrate that the correlation between students' Room Self-Efficacy and their academic success is low as compared to the other factors of College Self Efficacy. Correlation coefficient value ranges from 0.61 to 0.72 which is statistically significant.

Table 6. Inter Correlation Matrix

| Inter- Correlation between all the Four Factors | | | |
|---|------|-----|----------|
| | | | Estimate |
| CSE | <--> | RSE | .974 |
| RSE | <--> | SSE | 1.016 |
| SSE | <--> | SIS | .970 |
| CSE | <--> | SIS | .951 |

| <i>Inter- Correlation between all the Four Factors</i> | | | |
|--|------|-----|-----------------|
| | | | <i>Estimate</i> |
| CSE | <--> | SSE | .983 |
| RSE | <--> | SIS | .966 |

The analysis shows that interrelationship between courses self -efficacy factor , Roommate Self Efficacy, social Integration self- efficacy and social self- efficacy factor is positively strong. The study also found that all the four factors are strongly and positively inter-correlated (Table 6).

The internal consistency reliability of CSEI scale on the given sample is examined by Cronbach’s Alpha coefficient. Cronbach alpha reliability coefficient normally ranges from 0 to 1. In the sample value of alpha coefficient is 0.966 (closer to 1) which indicates higher internal consistency of the items in CSEI scale.

Path analysis (figure 1) has been done to explain the interrelationship between the college self-efficacy scale factors and its impact on academic success. A pictographic depiction of a model has been explained (figure 1). To analyze the research question is whether the specified model is supported by the sample data, CMIN (Normed Chi-Square), Root Mean Square Error of Approximation (RMSEA) and Comparative Fit Index (CFI) has been calculated. The value of RMSEA in the study is 0.00 which indicates a close fit of the model in relation to the degrees of freedom (rule of thumb: <0.05). Comparative Fit Index value is 0.84 which is closer to 1 which indicates that CSEI scale has good fit on the sample data. CMIN (Normed Chi-Square) value is 1.82 which lies in the range from 1 to 5 that proved the model fit of data (Table 3).

Table 7. Model Fit Criteria

| <i>Model Fit Parameters</i> | <i>Results</i> | <i>Interpretation</i> |
|-----------------------------|----------------|---|
| RMSEA | 0.00 | Value less than 0.05 indicates a good model fit |
| CFI | 0.84 | Value closer to 1 reflects a good model fit |
| CMIN | 1.82 | Value Less than 1.0 is a poor model fit, More than 5.0 indicates a need for improvement |

In the study Mahalanobis distance (Table 8) has been examined to check the problem of multi-collinearity and Durbin –Watson (Table 8) has been calculated to detect the problem of auto- correlation in the data. The study found that there is a significant problem of multi-collinearity (89.54) but the problem of auto- correlation (1.956) has not been found. R-Square value 83.4 % (Table 8) which demonstrate the proportion of total variation of outcomes explained by the model. It specifies how well the data fit in a statistical model.

Table 8. Estimates

| <i>R-Square</i> | <i>Adjusted R-Square</i> | <i>Sig. F-Change</i> | <i>Durbin-Watson</i> | <i>Maha. Distance</i> |
|-----------------|--------------------------|----------------------|----------------------|-----------------------|
| 0.834 | 0.806 | 0.000 | 1.956 | 89.54 |

CONCLUSIONS

The current study has made favorable steps in collecting validity evidence for the CSEI scale on Indian students and delivers a better understanding of this instrument. However building the case for validity for a particular instrument is a never ending process (e.g. Benson, 1998), and extra work is required. The present study determines that the CSEI scale appropriate the data. There is significant interrelationship between course-roommate-social-social integration self-efficacy of Indian students. Overall, academic success is extremely influenced by “Talk to your professors” (SIS2) whereas least influence by “Join an intramural sports team” (SSE7). Study also explains that psychological factors need to be understood with first year students for college adjustment.

In precise, it is important to reexamine the conceptualization of the college self-efficacy to make sure that all the dimensions of the college experiences of the students are effectively indicated. There are other factors which influence the college experience e.g. motivation, goal choices, experiences got from family and social comparison, perception etc.

The study has not compared the scale based upon the gender differences. The study also found the problem of multi – collinearity in the data. It could be due to the repetition of same kind of items in the scale or factors are highly correlated to each other (Table 2). The study concludes that the degree of confidence of Indian students can be measured through social self-efficacy, social integration self-efficacy, course self-efficacy and roommate self-efficacy.

The study has also examined the college self-efficacy as a predictor of academic success. The results of present research study have revealed that there is a significant and positive relationship between college self-efficacy and their academic achievements with 95% confidence. In other words, the student’s college self-efficacy would affect their academic success. Moreover the results of research have not explored the other factors which may affect academic success. The future researcher can explore the other factors which may affect academic success.

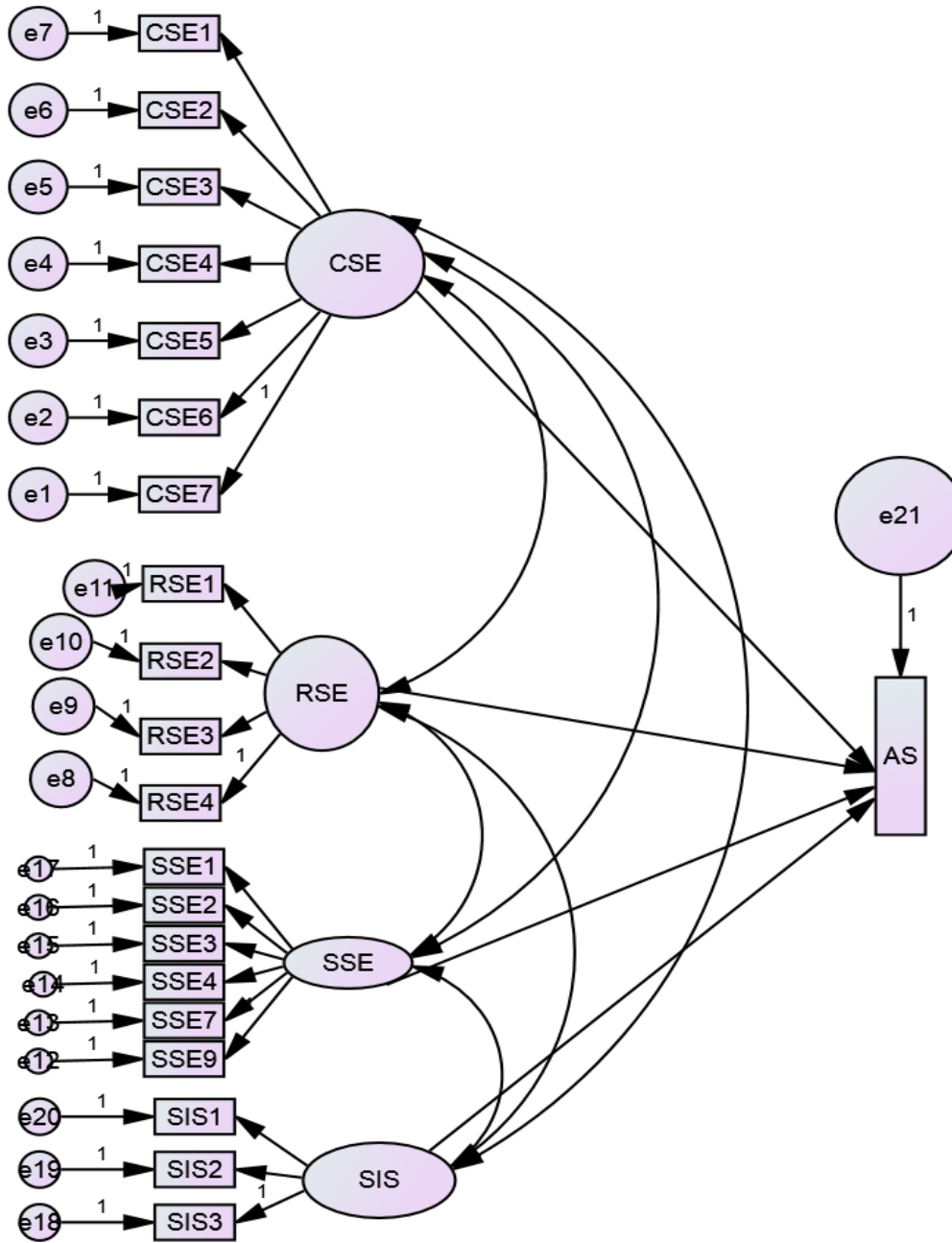


Figure 1: Path Analysis Diagram

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