Validation of a self-report instrument to assess social and emotional development

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ABSTRACT

The current study, using a factor level analysis approach, provides evidence of the validity of the Social Emotional Development Instrument (SED-I) for students in higher education. Although there are a multitude of models and measures that borrow from the premise of emotional intelligence (EI), very few current instruments focus exclusively on a developmental path of social emotional competence development for young adults. In addition, prior validity studies with these measures fail to include a full spectrum of potential convergent and discriminant analyses assessed at the factor level. This validation study suggests that the SED-I is a reliable, robust and comprehensive measurement for assessing college students' social emotional competency changes. Limitations and suggestions for future research are also discussed.

Keywords: social, emotional, competence, development, validation

INTRODUCTION

Although there are a multitude of models and measures that borrow from the premise of emotional intelligence (EI), there are no current instruments that focus exclusively on a developmental path of social emotional competence development for students in higher education. The purpose of this paper is to provide evidence of the validity of a new measure of social emotional competence development that has emerged in the literature (Seal, Naumann, Scott, & Royce-Davis, 2011a; Seal, Beauchamp, Miguel, & Scott, 2011b), called the Social Emotional Development Inventory (SED-I). This paper provides an empirical evidence of the potential utility of the new instrument, as well as an in-depth analysis of the relationships with various emotional/social assessments. There are few validity studies that have compared multiple EI measures with other assessments and even fewer have examined constructs at the factor and sub-factor levels. Previous studies typically fail to examine constructs at the factor level, often defaulting to comparing total scores with one another. Therefore, a key contribution of the current paper is the integration of multiple measures focusing on factor level analysis, within a pre-defined framework of a priori hypotheses. The paper demonstrates the valid use of the SED-I self-report assessment as one of a series of developmental tools available for educators in higher education to better assess student knowledge, traits and behaviors. To accomplish the goal of providing validation for the SED-I, this paper provides an overview of social emotional competence development, the related soft skills measures, and a series of sub-studies that examine the convergent and discriminant relationships between the SED-I and relevant, related instruments.

Emotional Intelligence

In general, EI may be defined as the overlap between emotion and intelligence, or more simply, the intelligent use of emotions. EI is the overall term reflecting the intelligent use of emotions, emotional quotient (EQ) refers specifically to the emotional traits as advocated by Bar-On (1988), emotional ability (EA) refers to the underlying potential of EI as advocated by Salovey and Mayer (1990), and emotional competency (EC) refers to the EI skills related to superior performance as advocated by Goleman (1995; 1998). Specifically, EI may be defined as a constellation of capacities, patterns, and behaviors to recognize and regulate the emotions of self and others toward successful environmental adaptation (Seal & Andrews-Brown, 2010).

Social Emotional Competence Development

Social emotional competence development (SECD) emerged from the integration of social and emotional intelligence theories toward the practice of student development in higher education. The model is primarily an outgrowth of the emotional social competence model developed by Boyatzis and Goleman (Boyatzis, Stubbs, & Taylor, 2002; Goleman, Boyatzis, & McKee, 2002). Their model was derived heavily from the Self-Assessment Questionnaire (SAQ), developed by Boyatzis (1994) which focuses on business managers and MBA students. In contrast, the SED-I items were developed using undergraduate and graduate level focus groups geared toward tapping underlying competences ascribed to college academic, relational, and career success (Seal et al., 2011a).

SECD is defined as the enhancement of personal capacity to manage environmental challenges. The concept is a consequence of the application of social intelligence, emotional intelligence, and competence research toward higher education development. The conceptual model encompasses four primary factors (Seal et al., 2011a): Self-awareness (knowledge and understanding of your emotions and aptitudes), Consideration of Others (regard for the person and situation before thinking and acting), Connection to Others (ease and effort in developing rapport and closeness with others), and Influence Orientation (propensity to seek leadership opportunities and move others toward change). The assumption of SECD is that students who develop their capacity to understand themselves, consider the world around them, build meaningful relationships, and foster positive changes will have an advantage in meeting academic, relational, and career challenges (Kuh, Kinzie, Schuh, Whit, & Associates, 2010). The model and measure are best used in conjunction with other developmental tools to assist in identifying key strengths and limitations of students.

The SECD model is measured using the SED-I which includes 48 self-reported Likert style questions asking the test-taker to indicate how often a particular question relates to them (1 = very rarely; 7 = very often). Each of the four factors is linked to 12 of the questions on the survey instrument. In assessing Self-awareness and Consideration of Others, the question is asked "how often that statement is true of you," while Connection to Others and Influence Orientation factors use the prompt "predict how often your friends would say that statement is true of you." The SED-I demonstrated adequate internal consistency (r = .91) with a university population of freshman (Seal et al., 2011b). However, the instrument needs to be assessed against other, similar types of instruments using an expanded sample population in order to validate the tool.

Alternative Measures of Soft Skills

One of the major concerns regarding measures of soft skills (e.g., skills that focus on relationships between people), particularity those that have emerged from the literature on EI, is the lack of robust, comprehensive validity studies that incorporate multiple measures of EI, as well as personality and other related constructs, and examine instruments at the factor level (rather than just comparing total scores).To address those issues, the present validity study uses two prominent measures of EI as well as measures of personality, emotions, self-monitoring, and social desirability. These six soft skills assessments are leading measures in the fields of psychology, education, and management.

Mayer-Salovey-Caruso Emotional Intelligence Test 2.0 (MSCEIT 2.0)

Salovey and Mayer (1990) defined EI as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189). Their version of EI emerged from the literature on social intelligence with a focus on how emotions facilitate thought using an instrument that had right and wrong answers (using consensual and/or expert, normed scoring). Generally, emotional ability is the potential capacity to understand and explain emotions and to use that knowledge to improve decision making.

The MSCEIT uses four branch scores: (1) Perceiving Emotions indicates the degree to which the respondent can identify emotion in himself or herself and others; (2) Facilitating

Thought specifies the degree to which the respondent can use his or her emotions to improve thinking; (3) Understanding Emotions suggests how well the respondent understands the complexity of emotional meanings; and (4) Emotional Management registers how well the respondent is able to manage emotions in his or her own life and in others. Some overlap between EI measures would be expected. However, since the underlying assumptions and method of assessment are different, minimal relationships between the MSCEIT and SED-I are expected surrounding the Emotional Management scores.

Bar-On Emotional Quotient Inventory (EQ-i)

Bar-On (2006) defined EI as the "cross section of interrelated emotional and social competencies, skills, and facilitators that determine how effectively we understand and express ourselves, understand others, and relate with them, and cope with daily demands" (p. 14). This version of EI emerged from the literature on positive psychology with a focus on psychological well-being using a self-report measure that included normed scoring. Overall, emotional quotient involves the preferred emotional patterns that influence understanding and coping with environmental demands to achieve psychological well-being.

The EQ-i uses five component scores: (1) Intrapersonal EQ which includes emotional self-awareness, assertiveness, self-regard, self-actualization, and independence; (2) Interpersonal EQ which includes interpersonal relationships, empathy, and social responsibility; (3) Stress Management EQ which includes stress tolerance and impulse control; (4) Adaptability EQ which includes problem solving, reality testing, and flexibility; and (5) General Mood EQ which includes happiness and optimism. Given the overlap in assumptions and method between the SED-I and EQ-i, we would assume a greater level of statistical overlap than with the MSCEIT, particularly in the areas of Inter- and Intrapersonal EQ and SECD.

International Personality Item Pool (IPIP) Big-Five Factor Markers

Personality is generally defined as a stable set of characteristics and tendencies that determine those commonalities and differences in the psychological behavior (thoughts, feelings, and actions) of people that have continuity in time and that may not be easily understood as the sole result of the social and biological pressures of the moment (Goldberg, 1992).

To assess personality, the IPIP focuses on the Big Five factor model of (1) Extraversion – engagement with the external world; (2) Agreeableness – cooperation and social harmony; (3) Conscientiousness – control, regulation, and direction of impulses; (4) Emotional Stability – coping effectively with normal demands of life; and (5) Intellect - novelty, variety, change, and creativity (Goldberg, 2001). As with all self-report instruments that focus on social skills, we would expect a high level of method bias as well as significant relationships between the SED-I and IPIP, in particular the factors of Extraversion, Agreeableness, and Conscientiousness.

Trait Meta-Mood Scale (TMMS)

An early pre-cursor to the modern EI measures, the TMMS (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) is focused on Emotional Attention (attending to thoughts and feelings), Emotional Clarity (distinguishing among feelings), and Emotional Repair (improving negative moods). As a measure of emotional self-awareness we would expect an overlap between the

TMMS scales of Emotional Attention and Emotional Clarity and the SED-I Self-Awareness factor.

Self-Monitoring Scale (SM)

Self-monitoring is defined as the presumed and consistent patterns of individual differences in the extent to which people regulate their self-presentation by tailoring their actions in accordance with immediate situational cues (Lennox & Wolfe, 1984). In particular self-monitoring is divided into two aspects: (1) Modify Self – ability to modify self-presentation and (2) Sensitivity Others – sensitivity to the expressive behavior of others. In the article introducing the social emotional competence development model, Seal et al. (2011a) defined Consideration of Others as the thoughtful regard for the person and situation in anticipating the likely consequences before thinking and acting. One of the components of Consideration is monitoring, which includes recognizing/anticipating consequences and regulating/thinking before speaking or acting. Since the Consideration of Others factor of the SED-I specifically relates to monitoring one's behavior in the presence of others, we would expect a significant positive relationship between SM and the Consideration factor score.

Marlowe-Crowne Social Desirability Scale (SD)

Social desirability is the tendency of respondents to reply in a manner that will be viewed favorably by others (Reynolds, 1982). Since the SED-I is a self-report instrument, the question of which factors are influenced by social desirability becomes a concern. The hope is that none of the factors indicates a significant relationship to social desirability.

RESEARCH DESIGN

The six critical measures reviewed above establish the framework for the factor analysis reported here. The current paper builds on the psychometric assessment paper (Seal et al., 2011b) by expanding the demographics of the initial study, considering students at different levels in their education (e.g., undergraduate, graduate students), establishing test-retest reliability, as well as examining convergent/discriminant validity evidence (e.g., the relationship of the SED-I to alternative emotional intelligence and personality instruments). Seal et al. (2011b) previously assessed other aspects of the measure, including item generation, internal consistency, factor structure, and readability grade level. In the current investigation, three assessment studies to evaluate the SED-I measures were conducted, including psychometrics assessment, test-retest reliability assessment, and convergent/discriminant validity assessment

STUDY 1: PSYCHOMETRICS

To assess the generalizability of the SED-I instrument, a series of psychometric analyses were conducted to replicate results from the freshman study (Seal et al., 2011b), using transfer, professional, and graduate students.

METHOD

A total of 1,134 students completed the survey. In order to test the reliability of the instrument, students were divided into two different groups based on student characteristics. Group 1 includes 632 first time freshman students from the original study (Seal et al., 2011b) and Group 2 included 502 students comprised of sophomores, juniors, seniors, transfer students, professional students, and graduate students.

Group 1 was made up of 62% females and 38% males, between the ages of 16 and 19 years old, with a mean age of 18. The ethnic makeup of the sample was 39% White/Non-Hispanic, 35% Asian/Pacific Islander, 15% Hispanic, and 11% were comprised of African American, Native American, multiethnic, and international/unknown/other categories.

Group 2 was comprised of 60% female and 40% male, between the ages of 17 and 53, with a mean age of 23.The ethnic makeup of the sample was 44% Asian/Pacific Islander, 32% White/Non-Hispanic, 9% Hispanic, and 15% comprised of African American, Native American, Multi-ethnic, and international/unknown/other categories.

Participants were recruited through an email campaign asking students to complete the SED-I measure online receiving a web link to the survey in the email. Once students clicked on the email link, they were given an informed consent screen with the option of opting into the study. Total time to complete the measure was about 15 minutes.

Results

The psychometric analyses included descriptive statistics, data screening, internal consistency assessment, and exploratory factor analysis.

The descriptive statistics for item scores, item-factor correlations, 4-factor communalities, and principal components pattern matrices coefficients (using direct oblimin rotation, $\delta = 0$) are presented in Table 1. See Table 1 (Appendix).

Most items were significantly ($p < .001$) negatively skewed (31) and leptokurtic (11). Scores were reflected and transformed to square root equivalents. As with the Group 1 freshman data set (Seal et al., 2011b), the square root transformation reduced the number of skewed (27) and leptokurtic cases (3). Using z score > 4.00 as the criterion, one univariate outlier was detected and removed. The search for multivariate outliers was limited to those cases with complete data (517). Fifteen people met the outlier criterion of a Mahalanobis distance greater than 103 ($p < .00001$) and these scores were removed. The resulting data set consisted of the 502 cases indicated above.

The untransformed scores were used to assess internal consistency (total score and factor reliability) using Cronbach's coefficient alpha. The total score alpha of .91 indicates good internal consistency. As compared to the results reported by Seal et al., (2011b), this sample had slightly higher internal consistency scores across the factors, except for the Influence Orientation factor. Table 2 contains the coefficient alpha values for this study and the study by Seal et al. (2011b). See Table 2 (Appendix).

To determine the number of factors, a principle components analysis (PCA) was conducted with the untransformed data. Indicating that the correlation matrix was factorable, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .89. Seal et al. (2011) reported .90 for their freshmen data set. The PCA, with SPSS default settings in place, was conducted on the 48 items using the raw data and 10 factors were extracted. The resultant information is

returned in the form of a scree plot and variance tables. The scree plot showed elbows between components five and six, leveling afterward. The drop between factors five and six shows where the eigenvalues were < 2. The eigenvalue on the fifth factor was 2.20; however, it was still dropped to preserve the 4-factor model. The PCA was run again, forcing four factors; see Table 1 for communalities and pattern matrix coefficients. Multiple PCAs were conducted with two data transformations and several rotation procedures; the results were not substantially improved relative to the results from the raw data analysis reported here. The four-factor solution accounted for 40% of the variance in the dataset; the same procedure accounted for 38% of the variance for the Seal et al. (2011) data set. Thus, there was little variance in results across the two data sets.

STUDY 2: TEST-RETEST RELIABILITY ASSESSMENT OF THE SED-1

To assess the reliability of the SED-I instrument, a test-retest study was conducted to determine the consistency of scores over time.

Method

A total of 84 freshmen participants completed the SED-I twice within a 3 to 7 month time period with the majority of the students completing the two self-assessments within a 4 to 6 month interval, admittedly a long delay for self-report, test-retest reliability assessment of a developmental instrument. Students were recruited through their classes to re-take the SED-I instrument for the test-retest study.

Results

Pearson test-retest correlation coefficients were calculated for each of the 48 items and for the four factors; the factor results are reported along with two-tailed probabilities that the correlation values exceed 0. Means and standard deviations were computed for each set of test scores for each factor. With regard to the four factors, the results show good test-retest consistency for the Connection with Others and Influence Orientation factors, but not for the other two factors as outlined in Table 3. See Table 3 (Appendix).

The means declined for every factor. Given that unpredicted result, post-hoc *t*-tests were calculated for the mean differences for each factor to assess the reliability of the score reductions. None of the 95% confidence intervals included zero, that result in addition to the result that no *t*-test value showed a probability greater than .01, suggests that the score reductions for each factor were reliable. The Connection to Others factor showed the least amount of reduction. The reliability and mean differences data imply that during freshmen year, students tend to modify their Self-Awareness and Consideration of Others, showing a trend of reducing their self-ratings in these areas. Results of the *t*-tests are presented in Table 4. See Table 4 (Appendix).

STUDY 3: CONVERGENT/DISCRIMINANT VALIDITY TESTING

To provide evidence of the potential validity of the SED-I instrument, a series of convergent and discriminant studies were conducted, comparing the SED-I to other general

measures of EI (MSCEIT and EQ-i) as well as personality (IPIP), emotion (TMMS), self-monitoring (Lennox & Wolfe, 1984), and social desirability (Reynolds, 1982).

Method

The measures chosen for inclusion are among the most widely used measures in psychology, education, and management. For the purposes of this study, we used several decision rules to define the level of relationship (correlation), criterion for convergent validity (alpha level to reject the null hypothesis), and criterion for discriminant validity (alpha level to accept the null hypothesis). In terms of correlations (level of relationship of the SED-I factors to the alternative measure), we created the following categories: a correlation of less than ± 0.09 is negligible, ± 0.10 through 0.30 is a small correlation, ± 0.31 through 0.49 is a moderate correlation, and > ± 0.50 is a strong correlation. In terms of convergent validity, the alpha level was set at the standard .05 to minimize type I errors. Finally, for discriminant validity, the alpha level was set at a higher threshold of .20 to minimize type II errors.

In order to establish the a priori hypotheses, a series of steps were followed. Two independent researchers predicted the level of convergence between the SED-I and the various measures based on (a) the purpose and definitions of each of the measures as indicated by their authors and (b) a language analysis that assessed the frequency of exact match, close match, and concept match. First the researchers mapped out conceptual overlaps that occurred between instruments. Any definitions of constructs that appeared related were marked, regardless of actual method. Second, a set of researchers familiar with the instruments then reviewed the predicted relationships and adjusted them based on intent of the construct as well as the operational method used. The researchers examined each assessment at the factor level and predicted a negligible, small, moderate, or strong correlative value with SED-I factors. The predictions, both summative and semantic, were then reviewed by a third researcher, who synthesized the results matrix into one set of predictions. The two-pronged approach attempted to develop a comprehensive view of the SED-I convergent/discriminant validity. The final hypotheses were then compared to observed Pearson's correlation coefficients; the bivariate correlation was run between each assessment's factors and the SED-I factors with the two-tailed test of significance, mean, and standard deviation reported and significant correlations flagged. Correlations were declared significant at the .05 level for convergent validity and at the .20 level for discriminant validity.

The following details the six sub-studies, comparing the specific instrument scores to the SED-I scores. In each sub-study, we indicate the participants (as each had a different sub-set of the overall sample), hypothesis (established through the process outlined above), and results (of the Pearson correlation coefficient). For an overview of the results, see Table 5 (Appendix).

Study 3.1: Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)

As noted earlier, Salovey and Mayer (1990) defined EI as the capacity to understand and explain emotions and to use that knowledge to improve decision making. Their definition focused on differentiating individual levels of specific emotional reasoning capacities using the Mayer-Salovey-Caruso Emotional Intelligence Test or MSCEIT (Mayer, Salovey, & Caruso, 2002) to measure those differences. The MSCEIT uses right/wrong answer formats (based on consensual and expert scoring) that are normed using demographic information (age, gender, and

ethnicity) to differentiate levels of emotional ability. The MSCEIT uses a hierarchical model of related abilities that reflect overall EI potential capacity by measuring four branch scores (Perceiving Emotions, Facilitating Thought, Understanding Emotions, and Emotional Management), two area scores (Experiential Emotional Intelligence and Strategic Emotional Intelligence) and one final total score (Emotional Intelligence). For our purposes, we administered the MSCEIT online, using consensual scoring, and focused on the four branch scores.

The MSCEIT sub-study included 85 participants. Fifty-one (60%) were female, 32 (38%) were male, and the remainder were not identified. Participants' age ranged from 17 to 53, (mean = 21, SD = 6.3). Participants were enrolled in the undergraduate pharmacy/health program (38%), the graduate education program (32%), various undergraduate programs in arts and sciences (19%) and the remainder in an aggregate of other schools with less than 5% each (21%).

Our initial hypotheses were the following:

H3.1.1 – The Managing Emotions branch of the MSCEIT would have a small significant positive correlation with the Self-awareness factor score of the SED-I.

H3.1.2 – The Managing Emotions branch of the MSCEIT would have a small significant positive correlation with the Influence Orientation factor of the SED-I

H3.1.3 – Since the underlying assumptions and methods of assessment are different, we would expect that the two measures would not correlate in other areas, that is, the remaining branch scores of the MSCEIT and factor scores of the SED-I should not be significantly correlated.

To test the hypotheses, Pearson's correlation coefficients were calculated between each branch of the MSCEIT and each factor of the SED-I (Table 6).

Hypothesis 3.1.1 was not supported as there was a negligible correlation (-.03) that was not statistically significant (even at the alpha = .20 level), indicating no relationship between the variables.

Hypothesis 3.1.2 was not supported as there was a small, negative correlation (-.19) that was not statistically significant at the .05 level, but was significant at the .20 level, indicating a possible negative relationship between the variables.

Hypothesis 3.1.3 was largely confirmed across factors of both instruments; however, there was a small correlation between Perceiving Emotions (MSCEIT) and Consideration of Others (SED-I) as well as a small correlation between Using Emotions (MSCEIT) and Influence Orientation (SED-I), neither of which met the alpha > .20 decision rule, indicating possible relationships between the variables.

Study 3.2: Bar-On Emotional Quotient Inventory (EQ-i)

As noted earlier, Bar-On (2006) defined EI as the emotional patterns that influence understanding and coping with environmental demands to achieve psychological well-being. His definition focuses on the emotional-social traits or patterns that contribute toward effective psychological functioning using the Emotional Quotient Inventory or EQ-i (Bar-On, 1997) to measure the self-reported patterns. The EQ-i is a self-report measure of emotional quotient that uses a compensatory model of 5 composite scales (Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood) comprised of 15 sub-scales. For our purposes, we administered the EQ-i online and focused on the five composite scale scores.

The EQ-i sub-study included 280 participants, 168 (60%) of which were female and 110 (38%) of which were male, and 2 not identified. Participants' ages were between 17 and 53, (mean = 20, SD 4.3). Participants were undergraduate and graduate students, enrolled in business administration (45%), pharmacy/health programs (24%), arts and science (16%), education (10%), and the remainder in an aggregate of other schools (5%).

Our initial hypotheses were as follows:

H3.2.1 – The Intrapersonal composite score of the EQ-i would have a moderate significant positive correlation with the Self-awareness factor score of the SED-I.

H3.2.2 – The Interpersonal composite score of the EQ-i would have a moderate significant positive correlation with the Consideration of Others factor score of the SED-I.

H3.2.3 – The Interpersonal composite score of the EQ-i would have a moderate significant positive correlation with the Connection to Others factor score of the SED-I.

H2.4 – Stress Management, Adaptability, and General Mood of the EQ-i would have a small, but not significant relationship with the SED-I factors.

To test the hypotheses Pearson's correlation coefficients were calculated between each composite scale of the EQ-i and each factor of the SED-I (Table 7).

Hypothesis 3.2.1 was supported, as there was a moderate, significant positive relationship between the Intrapersonal composite score of the EQ-i and the Self-awareness factor score of the SED-I. In addition, although there were other significant relationships, this relationship had the highest correlation between EQ-i scores and Self-awareness.

Hypotheses 3.2.2 and 3.2.3 were partially supported, as there was a significant positive correlation between the Interpersonal composite score of the EQ-i and the Connection to Others and Consideration of Others factors of the SED-I. However, the correlations were small instead of the predicted moderate values, and the other factors (Self-awareness and Influence Orientation) displayed unpredicted, but similar small correlations.

Hypothesis 3.2.4 was not supported, as across all the analyses there were small to moderate positive significant correlations between the measures, indicating substantial overlap between the two instruments.

Study 3.3: International Personality Item Pool (IPIP Big 5)

Personality is generally defined as a stable set of characteristics and tendencies that determine those commonalities and differences in the psychological behavior of people that have continuity in time (Goldberg, 1992). Personality was measured using the International Personality Item Pool (Goldberg, 2001). The IPIP assesses the Five-Factor Model (FFM) of personality, originally developed by Thurstone (1934) and clarified by Goldberg (1992) and is considered "the central paradigm for defining and measuring personality" (Polednik & Greig, 2000, p. 9). The IPIP inventory uses 50 items and users rate how accurately the phrases describing people's behavior describes them on a five-point Likert scale (from "1" very inaccurate to "5" very accurate), and the measure takes approximately 10-20 min to complete. The alpha reliability coefficients of the items range from .71 (Openness to Experience) to .89 (Extroversion); (Buchanan, Johnson, and Goldberg, 2005).

The IPIP sub-study included 181 undergraduate and graduate participants: 93 (51%) were female and 88 (49%) were male. Participants were between 17 and 44 with a mean of 19 and a

standard deviation of 3.0. Participants were enrolled in business administration (84%), arts and sciences (12%), and the remainder is an aggregate of other schools (4%).

Our initial hypotheses were the following:

H3.3.1 – Extraversion and Agreeableness scale scores of the IPIP will have small positive correlations with the Connection to Others factor score of the SED-I.

H3.3.2 – Conscientiousness scale scores of the IPIP will have a small positive correlation with the Influence Orientation factor score of the SED-I.

H3.3.3 – None of the other IPIP scale scores (including Emotional Stability and Intellect) will have significant positive correlations with any of the SED-I factor scores.

To test the hypotheses Pearson's correlation coefficients were calculated between each factor of the IPIP and the factors of the SED-I (Table 8).

Hypothesis 3.3.1 was supported, as there was a strong positive correlation between the Connection to Others factor of the SED-I and the Extraversion scale score of the IPIP and a moderate positive correlation between the Agreeableness scale score of the IPIP. In addition, those were the two highest correlations between the Connection to Others factor and the other IPIP scores.

Hypothesis 3.3.2 was not supported, as there was a nonsignificant negligible Conscientiousness-Influence correlation.

Hypothesis 3.3.3 was not supported, as both Emotional Stability and Intellect had small to moderate significant positive correlations with each factor of the SED-I. In addition Extraversion had moderate to strong correlations with Self-awareness, Influence Orientation, and Connection to Others; Agreeableness had small to moderate relationships with all SED-I factors; and Conscientiousness had small to moderate correlations with Connection to Others, Self-awareness, and Consideration of Others. Overall, there is quite a bit of overlap between the IPIP and SED-I.

Study 3.4: Trait Meta-Mood Scale (TMMS)

The Trait Meta-Mood Scale (TMMS) focuses on assessing three core areas of emotion: (1) Attention – attention that individuals devote to their feelings; (2) Clarity – clarity of their experiences of these feelings; and (3) Repair – their beliefs about terminating negative mood states and prolonging positive ones (Salovey et al., 1995, p. 127). The TMMS is a short, 30-item assessment that uses a five-point Likert scale asking participants how strongly they agree or disagree with each statement. Results are organized into one of three factors: Attention, Clarity, or Repair.

The TMMS sub-study included 248 undergraduate and graduate participants; 152 (61%) were female and 94 (38%) were male, with 1% not assigned. Participants were between 17 and 53 where M = 19 and SD = 3.3. Participants were enrolled in business administration (43%), pharmacy/health sciences (36%), arts and sciences (10%), education (7%), and the remainder in an aggregate of other schools (4%).

Our initial hypotheses were as follows:

H3.4.1 – Attention to feelings and Clarity of feelings scale scores from the TMMS will have moderate positive correlations with the Self-awareness factor score of the SED-I.

H3.4.2 - Repair scale score should not correlate with any of the SED-I factor scores.

H3.4.3 – Attention to feelings and Clarity of feelings scale scores will have significant positive correlations with Consideration, Connection, or Influence factors scores of the SED-I.

To test the hypotheses Pearson's correlation coefficients were calculated between each factor of the TMMS and factor of the SED-I (Table 9).

Hypothesis 3.4.1 was partially supported, as there was a strong positive correlation between Clarity of feelings of the TMMS and Self-awareness of the SED-I. However, the relationship between Attention to feelings and Self-awareness was moderate and was the weakest correlation, as Influence Orientation, Consideration of Others, and, in particular, Connection to Others all had stronger correlations.

Hypothesis 3.4.2 was not supported as Repair emotions of the TMMS had a moderate positive significant relationship to each factor of the SED-I. Of note is the consistency of the relationship between Repair and the various SED factors.

Hypothesis 3.4.3 was not supported as Attention to feelings and Clarity of feelings had significant moderate positive relationships to each factor of the SED-I as indicated above.

Study 3.5: Self-Monitoring (SM)

Self-monitoring presumes consistent patterns of individual differences in the extent to which people regulate their self-presentation by tailoring their actions in accordance with immediate situational cues (Lennox & Wolfe, 1984, p. 1349). As mentioned earlier, the SED-I dimension of Consideration of Others is the thoughtful regard for the person and situation in anticipating the likely consequences before thinking and acting. One of the stated components of Consideration is monitoring, which includes recognizing/anticipating consequences and regulating/thinking before speaking or acting. Thus, we would expect a significant, positive relationship between Self-monitoring and the Consideration of Others factor of the SED-I.

The Self-Monitoring assessment (SM) uses a 13-item survey, asking participants to respond to 5-point Likert type scale regarding their level of agreement with each item. Scores are organized into two key dimensions of self-monitoring: (1) Modify self – ability to modify self-presentation and (2) Sensitivity Others – sensitivity to expressive behavior of others.

The SM sub-study included 209 undergraduate and graduate participants; 118 (57%) were female and 89 (43%) were male. Participants were between 17 and 53 with a mean of 20 and a standard deviation of 4.2. Participants were enrolled in business administration (68%), arts and sciences (17%), education (8%), and the remainder in an aggregate of other schools (7%).

Our initial hypotheses were the following:

H3.5.1 – Modify Self and Sensitivity Others of SM should both have a moderate significant positive correlation to the Consideration of Others factor of the SED-I.

H5.2 – Neither of the SM scale scores should have a moderate significant relationship to the three other SED factors.

To test the hypotheses Pearson's correlation coefficients were calculated between each dimension of the SD and factor of the SED-I (Table 10).

Hypothesis 3.5.1 was partially supported in that both modify self-presentation and sensitivity to others of the SM had significant, positive relationships with Consideration of Others of the SED-I; however the correlations were small, not moderate.

Hypothesis 3.5.2 was partially supported, as there was a small significant relationship between Self-awareness on the SED-I and sensitivity to others on SM; however, the other relationships corresponded as hypothesized.

Study 3.6: Marlowe-Crowne Social Desirability Scale (SD)

Social desirability is the tendency for individuals to respond in a manner that will be viewed favorably by others (Reynolds, 1982). Correlations with this scale score could indicate potential for bias due to the pressure on respondents to appear socially desirable. The scale is a short, 13 item survey that uses true/false answers.

The SD sub-study included 239 participants, 147 (62%) were female and 90 (38%) were male. Participants were between 17 and 53 years of age, (mean = 19, SD = 3.5). Participants were enrolled in business administration (45%), pharmacy/health (33%), arts and science (10%), education (8%), and the remainder is an aggregate of other schools (7%).

Our initial hypothesis was:

H3.6.1 – The four factor scores of the SED-I should not have significant relationships with the SD score, and any correlations should be negligible.

To test the hypotheses Pearson's correlation coefficients were calculated between each factor of the SED-I and SD (Table 11).

Hypothesis 3.2.1 was partially supported in that Self-awareness, Connection to Others, and Influence Orientation of the SED-I all had negligible correlations with SD and all failed to meet the alpha .20 decision rules. However, Consideration of Others on the SED-I exhibited a small significant positive correlation to SD.

DISCUSSION

The current study builds on the findings of earlier research (Seal et al., 2011b) that validates a measure of social emotional competence development for higher education students, the SED-I. This robust and comprehensive measure is expected to help educators to better assess college students' knowledge, traits, and behaviors to further their self-development. Although a large number of EI measures exist, there are few current instruments that focus exclusively on this constituent group. In addition, prior validity studies with emotional competency measures have lacked a full spectrum of potential convergent/discriminant analyses assessed at the factor level.

The psychometric properties of a psychological test should be assessed from multiple occasions of measurement (McArdle & Woodcock, 1997). The principal components analysis results and the internal consistency of the SED-I were generally positive and similar to the results of the previous study by Seal et al. (2011b). The current data set exhibited slightly higher internal consistency scores across all factors, except the Influence factor. A 4-factor model was retained.

The SED-I factors of Influence Orientation and Connection to Others exhibited higher test-retest reliability as compared to the Self-awareness and Consideration of Others factors. This may indicate that the Influence Orientation and Connection to Others factors are more stable over time. These findings are not surprising given that measures of Self-awareness and Consideration of Others might be expected to change over relatively brief time periods for collegiate students and thus demonstrate lower test-retest correlations.

The correlations between the various measures and the SED-I can be seen as a successful integration of the concepts that create one picture of development possibilities. Each measure examines separate elements of social and emotional competency development with the exception of the Crowne-Marlow Social Desirability scale. The SED-I takes a unique approach toward applying these elements to practical use for higher education. While we would expect some overlap and correlations to exist, we did not find a measure that correlated so strongly with the SED-I as to suggest the SED-I is an unnecessarily redundant measure. Our a priori hypotheses were grounded in multiple approaches to construct understanding and our data were measured at more than one point in time providing more confidence in the findings.

Limitations

As with any study, several caveats should be considered in the interpretation of the results of our study. First, the test-retest component of the study had a longer time frame than is generally used to examine the psychometric properties of a psychological test. However, the fact that the Connection to Others and Influence Orientation factors of the measure demonstrated high test-retest reliability even after a significant time lag suggests these dimensions appear to be robust. Second, our results may have been affected by same source bias or common method variance (CMV) which has been defined as "systematic error variance shared among variables measured with and introduced as a function of the same method and/or source" (Richardson, Simmering, & Sturman, 2009, p. 763). Because all of the measures in the current study were self-reported, the items all came from the same source and, thus, may be subject to CMV. Third, we did not explicitly measure the Influence Orientation factor by any assessment other than the SED-I. Thus, the correlative value of the SED-I Influence Orientation factor could not be comparatively assessed in this analysis. Finally, due to the challenges of obtaining research participants on a college campus, different sampling procedures were used for each of the different sub-studies in this study, with varying subsets of students completing varying combinations of the measures.

Future Directions

Future studies will need to provide additional reliability and validity evidence for the SED-I. Based on the results of this study, specifically the PCA results for several questions and the test-retest reliability study, some items may need to be revised or deleted from the measure. Although the challenges will remain in recruiting college-aged students, additional studies should be employed with a shorter time lag design and across a variety of grade and/or age levels to help uncover outside factors explaining the differences in the test-retest scores over time. In the future, a confirmatory factor analysis will need to be conducted to validate the factor structure of the measure. Additionally, future research should include a measure that is comparative to the Influence Orientation factor on the SED-I to allow for convergent validity testing. Because our data is limited to self-report data, future research should gather data from multiple non-self-report sources, such as reports by others or behavioral data. Objective outcome measures that would be especially relevant to this area of research include grades, retention, teamwork, relationship quality, or career readiness. Lastly, understanding the predictive utility of this measure will be important and encourage greater use of the measure. This measure could show added value as if it demonstrated the ability to predict grades and college retention, as well

as show career or relationship success. Although the potential benefits of social emotional competence have been demonstrated (Boyatzis, Stubbs, & Taylor, 2002; Seal, Boyatzis, & Bailey, 2006) previously, the focus has been on an adult population. The SED-I is an assessment that is appropriate for college-aged students accounting for the unique developmental stage and experience.

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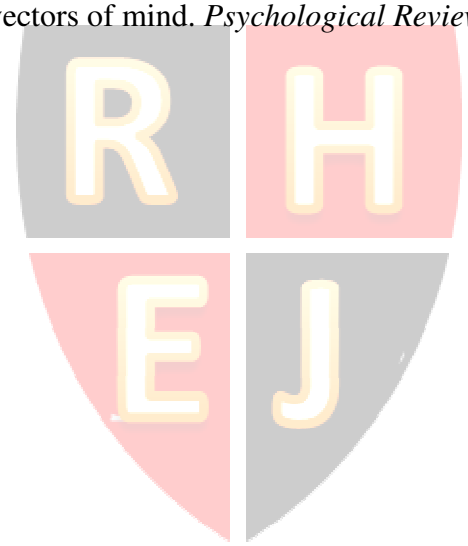

Table 1–Item Scores, Correlation, Communalities, and Coefficients

Item	Mean	Median	S.D.	*r* - Factor	Com. 4 Factor	Aware	Consider	Connect	Influence
Q01	5.52	6	1.10	.52	.41	.41		.33	
Q02	4.83	5	1.20	.71	.67				-.84
Q03	4.45	4	1.40	.46	.45			.66	
Q04	4.70	5	1.18	.74	.73				-.88
Q05	5.12	5	1.20	.52	.39			.36	-.40
Q06	5.01	5	1.02	.59	.46				-.64
Q07	5.33	6	1.27	.48	.40				-.44
Q08	4.74	5	1.03	.54	.40				-.57
Q09	5.24	5	1.28	.46	.31			.44	
Q10	4.79	5	1.38	.39	.24				-.48
Q11	5.81	6	1.02	.56	.44	.43		.40	
Q12	4.75	5	1.12	.62	.53				-.75
Q13	4.46	4	1.42	.43	.44			.65	
Q14	4.46	4	1.23	.69	.63				-.82
Q15	5.32	5	1.25	.54	.46	.34		.50	
Q16	4.84	5	1.19	.34	.23				
Q17	4.58	5	1.30	.28	.41		.34	.56	
Q18	3.81	4	1.37	.50	.39				-.65
Q19	4.88	5	1.22	.52	.39	.35		.36	
Q20	4.74	5	.99	.32	.18				-.35
Q21	4.80	5	1.55	.50	.35			.54	
Q22	5.00	5	1.09	.38	.23				-.35
Q23	5.33	5	1.01	.43	.30	.36			
Q24	4.74	5	1.07	.50	.38				-.47
Q25	5.86	6	.89	.54	.47	.68			
Q26	5.41	6	1.20	.52	.39		.54		
Q27	4.97	5	1.42	.45	.24			.33	
Q28	5.70	6	1.12	.58	50		.63		
Q29	6.11	6	.82	.58	.49	.65			
Q30	5.73	6	.88	.40	.41	.60			
Q31	5.75	6	.90	.59	.43	.56			
Q32	5.04	5	1.29	.49	.60		.78		
Q33	5.92	6	.94	.57	.43	.63			
Q34	5.43	6	1.12	.55	.49		.66		
Q35	5.62	6	1.04	.45	.41	.66			
Q36	5.54	6	1.04	.56	.43	.33	.48		
Q37	5.02	5	1.44	.42	.18				
Q38	5.67	6	1.10	.60	.50		.57		
Q39	5.69	6	1.17	.56	.45	.70			
Q40	5.43	6	1.00	.38	.35	.47			
Q41	5.62	6	.97	.53	.39	.61			
Q42	5.29	5	1.21	.35	.26		.39		
Q43	6.07	6	.85	.55	.43	.64			
Q44	5.89	6	.88	.54	.36	.42	.34		
Q45	4.42	4	1.36	.32	.30		.35	.38	
Q46	5.44	6	1.14	.42	.25	.36			
Q47	4.85	5	1.27	.45	.22	.38			
Q48	5.83	6	1.00	.48	.29	.38			

Table 2– Coefficient Alpha Values for the Untransformed Data

Cronbach's Alpha	Group 2 Sample (N = 502)	Group 1 Sample (Seal et al. 2011b) (N = 632)
48 items	.91	.91
Aware	.82	.79
Consider	.83	.81
Connect	.85	.83
Influence	.82	.84

Table 3 - Four Factor Pearson Test-Retest Correlations

Factor	*r*	*p*	Mean 1	Mean 2	SD 1	SD 2
Awareness	.36	< .01	65.4	61.1	6.6	7.4
Consideration	.53	< .001	65.5	60.5	8.0	8.2
Connection	.79	< .001	62.5	60.6	10.7	10.0
Influence	.74	< .001	57.4	53.8	10.6	9.4
Mean	**.61**		**62.7**	**59.0**	**9.0**	**8.8**

Table 4 – *t*-tests of Factor Score Mean Differences (time2 – time1)

				95% Confidence Interval	
Factor	*t*	*df*	2-tailed *p*	Lower Bound	Upper Bound
Awareness	5.04	83	< .001	2.6	6.1
Consider	5.73	83	< .001	3.2	6.6
Connect	2.67	83	< .010	0.5	3.4
Influence	4.56	83	< .001	2.0	5.2

Table 5 – Convergent/Discriminant Correlations

MSCEIT N = 85	**AWARE**	**CONSIDER**	**CONNECT**	**INFLUENCE**
Perceiving Emotions	.08+	.15	-.02+	-.03+
Using Emotions	.11+	.04+	.15	.11+
Understanding Emotions	.05+	-.02+	-.11+	-.03+
Managing Emotions	-.03+	-.01+	.00+	-.19
EQ-i N = 280	**AWARE**	**CONSIDER**	**CONNECT**	**INFLUENCE**
Intrapersonal	.32*	.19*	.30*	.31*
Interpersonal	.21*	.20*	.28*	.15*
Stress Management	.22*	.19*	.14*	.16*
Adaptability	.28*	.23*	.21*	.23*
General Mood	.20*	.15*	.26*	.25*
IPIP N = 181	**AWARE**	**CONSIDER**	**CONNECT**	**INFLUENCE**
Extraversion	.31*	.09	.52*	.46*
Agreeable	.31*	.48*	.41*	.16*
Conscientious	.26*	.38*	.18*	.09+
Emotional Stability	.46*	.33*	.32*	.20*
Intellect	.43*	.33*	.20*	.29*
TMMS N = 248	**AWARE**	**CONSIDER**	**CONNECT**	**INFLUENCE**

Attention	.15*	.20*	.37*	.19*
Clarity	.43*	.36*	.33*	.22*
Repair	.31*	.34*	.34*	.30*
SM N = 209	**AWARE**	**CONSIDER**	**CONNECT**	**INFLUENCE**
Modify Self	.13	.14*	.07+	.13
Sensitivity Others	.15*	.19*	.07+	.05+
SD N = 239	**AWARE**	**CONSIDER**	**CONNECT**	**INFLUENCE**
Social Desirability	.06+	.18*	.07+	.05+

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.

Table 6 – MSCEIT Correlations

MSCEIT N = 85	Perceiving Emotions	Using Emotions	Understanding Emotions	Managing Emotions
AWARE	.08+	.11+	.05+	-.03+
CONSIDER	.15	.04+	-.02+	-.01+
CONNECT	-.02+	.15	-.11+	.00+
INFLUENCE	-.03+	.11+	-.03+	-.19

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.

Table 7 – EQ-i Correlations

EQ-i N = 280	Intrapersonal	Interpersonal	Stress Management	Adaptability	General Mood
AWARE	.32*	.21*	.22*	.28*	.20*
CONSIDER	.19*	.20*	.19*	.23*	.15*
CONNECT	.30*	.28*	.14*	.21*	.26*
INFLUENCE	.31*	.15*	.16*	.23*	.25*

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.

Table 8 – IPIP Correlations

IPIP N = 181	Extraversion	Agreeable	Conscientious	Emotional Stability	Intellect
AWARE	.31*	.31*	.26*	.46*	.43*
CONSIDER	.09	.48*	.38*	.33*	.33*
CONNECT	.52*	.41*	.18*	.32*	.20*
INFLUENCE	.46*	.16*	.09+	.20*	.29*

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.

Table 9 – TMMS Correlations

TMMS N = 248	Attention	Clarity	Repair
AWARE	.15*	.43*	.31*
CONSIDER	.20*	.36*	.34*
CONNECT	.37*	.33*	.34*
INFLUENCE	.19*	.22*	.30*

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.

Table 10 – Self-Monitoring Correlations

SM N=209	Modify Self	Sensitivity Others
AWARE	.13	.15*
CONSIDER	.14*	.19*
CONNECT	.07+	.07+
INFLUENCE	.13	.05+

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.

Table 11 – Marlowe-Crowne Correlations

SD N=239	Social Desirability
AWARE	.06+
CONSIDER	.18*
CONNECT	.07+
INFLUENCE	.05+

*. Correlation is significant at the .05 level (2-tailed), indicating convergent validity.
+. Correlation is not significant at the .20 level (2-tailed), indicating discriminant validity.