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positive predictors of confidence in critical thinking, creative thinking, and networking, but *not* for entrepreneurial skills, again calling into light a contrast between traditional markers of academic success and potentially important career skills.

Another noteworthy finding was that a higher percentage of online courses was positively related to confidence in entrepreneurial skills ( $\beta = .031$ ;  $p < .001$ ), perhaps because both completing online courses and starting one's own business both require relatively higher degrees of self-motivation. Finally, there was a consistent pattern for sex, with males being more confident in all selected skills ( $\beta = .014$  to  $.124$ ;  $p < .05$  to  $.001$ ). This is of particular interest, given that with independent samples t-tests, females have higher skill confidence. Therefore, in this case it is especially important to have all of the other demographic and institutional variables in the model, as this provides a more complete understanding of the trend.

Table 7. OLS Regression Models for Skill Confidence: Standardized Beta Coefficients

	Creative Thinking		Entrepreneurial		Networking		Critical Thinking	
	Std. $\beta$	Sig.	Std. $\beta$	Sig.	Std. $\beta$	Sig.	Std. $\beta$	Sig.
<i>Step 1: Student Demographics</i>								
Male	<b>0.046</b>	0.000	<b>0.124</b>	0.000	<b>0.014</b>	0.028	<b>0.087</b>	0.000
First-generation Status	-0.013	0.049	0.002	0.697	<b>-0.019</b>	0.003	-0.004	0.568
Age	<b>0.044</b>	0.000	0.007	0.316	<b>-0.022</b>	0.001	<b>0.048</b>	0.000
ACT/SAT Score	<b>0.124</b>	0.000	<b>-0.085</b>	0.000	<b>-0.073</b>	0.000	<b>0.195</b>	0.000
Race: American Indian <sup>1</sup>	0.009	0.126	<b>0.013</b>	0.024	0.000	0.988	0.004	0.547

Race: Asian <sup>1</sup>	<b>-0.066</b>	0.000	0.010	0.102	<b>-0.028</b>	0.000	<b>-0.077</b>	0.000
Race: Black/African American <sup>1</sup>	<b>0.015</b>	0.022	<b>0.042</b>	0.000	<b>0.023</b>	0.000	<b>0.021</b>	0.001
Race: Hispanic/Latino <sup>1</sup>	-0.006	0.354	0.000	0.980	<b>-0.024</b>	0.000	-0.003	0.594
Race: Pacific Islander <sup>1</sup>	-0.007	0.218	-0.003	0.618	-0.002	0.718	-0.007	0.217
Race: Prefer not to respond <sup>1</sup>	0.006	0.346	<b>0.022</b>	0.000	-0.006	0.305	0.006	0.352
Race: Other race/ethnicity <sup>1</sup>	-0.002	0.743	0.011	0.060	0.002	0.733	0.004	0.461
Race: Multi-racial <sup>1</sup>	<b>0.019</b>	0.002	0.009	0.112	0.008	0.213	0.007	0.222

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*Step 1: College Experiences*

Transfer Status	0.008	0.210	<b>0.018</b>	0.004	<b>-0.031</b>	0.000	0.009	0.163
Enrollment Status	-0.013	0.044	-0.003	0.603	0.008	0.190	-0.007	0.257
Major: Humanities <sup>2</sup>	0.009	0.284	<b>-0.043</b>	0.000	<b>-0.035</b>	0.000	<b>0.088</b>	0.000
Major: Bio Sci. <sup>2</sup>	<b>-0.035</b>	0.000	0.008	0.383	0.017	0.089	<b>0.079</b>	0.000
Major: Phys. Sci. <sup>2</sup>	-0.011	0.162	-0.005	0.504	-0.015	0.074	<b>0.059</b>	0.000
Major: Social Science <sup>2</sup>	-0.001	0.894	<b>0.034</b>	0.001	<b>0.043</b>	0.000	<b>0.127</b>	0.000
Major: Business <sup>2</sup>	<b>-0.030</b>	0.003	<b>0.269</b>	0.000	<b>0.132</b>	0.000	<b>0.070</b>	0.000
Major: Comm. <sup>2</sup>	-0.002	0.793	<b>0.029</b>	0.000	<b>0.069</b>	0.000	<b>0.037</b>	0.000
Major: Education <sup>2</sup>	<b>-0.030</b>	0.000	-0.016	0.059	<b>0.020</b>	0.022	<b>0.019</b>	0.025
Major: Engineering <sup>2</sup>	-0.008	0.406	<b>0.063</b>	0.000	<b>0.043</b>	0.000	<b>0.074</b>	0.000
Major: Health Prof. <sup>2</sup>	<b>-0.037</b>	0.000	<b>0.035</b>	0.000	<b>0.060</b>	0.000	<b>0.064</b>	0.000
Major: Soc. Serv. Prof. <sup>2</sup>	-0.010	0.199	0.013	0.074	<b>0.034</b>	0.000	<b>0.060</b>	0.000
Major: Other <sup>2</sup>	<b>-0.024</b>	0.003	<b>0.037</b>	0.000	<b>0.042</b>	0.000	<b>0.029</b>	0.000
Major: Undecided <sup>2</sup>	<b>-0.027</b>	0.000	0.011	0.062	-0.003	0.651	-0.005	0.393
College grades-mostly B's <sup>3</sup>	<b>-0.047</b>	0.000	0.010	0.110	<b>-0.020</b>	0.002	<b>-0.061</b>	0.000
College grades-mostly C's <sup>3</sup>	<b>-0.039</b>	0.000	0.002	0.793	<b>-0.035</b>	0.000	<b>-0.054</b>	0.000
Percent of online courses	-0.005	0.472	<b>0.031</b>	0.000	0.010	0.099	0.000	0.956

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*Step 1: Institutional Characteristics*

Private Institution	0.004	0.604	-0.009	0.231	-0.004	0.585	-0.007	0.335
Institution Size	-0.003	0.694	-0.016	<b>0.034</b>	0.011	0.147	-0.006	0.416

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*Step 2*

Creative Coursework	<b>0.367</b>	0.000	<b>0.306</b>	0.000	<b>0.369</b>	0.000	<b>0.343</b>	0.000
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<sup>1</sup> Reference group: White

<sup>2</sup> Reference group: Arts majors

<sup>3</sup> Reference group: College grades-mostly A's

Note: Significant coefficients are bolded

## Discussion

There are several noteworthy results from this study that contribute to our knowledge of creativity and its function in higher education. Exposure to creative coursework is an important construct to assess, and the factor structure that arises from the Seniors Transitions module items confirms that the various components of creative thinking are indeed related. Many empirical studies have demonstrated that through the incorporation of creativity training programs in educational or laboratory settings, increases in creativity are possible (Pyryt, 1999; Scott et al., 2004). The various components of creative thinking included in these items suggest that explicit creative instruction can be reliably measured, even without the use of the word “creativity” appearing in the items themselves. It is imperative to have a robust measure of exposure to creative coursework before any further conclusions can be made regarding the relationship of the construct to other aspects of the educational experience. Therefore, the factor analyses were an essential first step in the exploration of how creative coursework can impact skill development, providing a solid base on which to conduct further quantitative analyses.

The preliminary comparisons across major fields found patterns consistent with previous research. Arts majors were significantly higher on exposure to creative coursework, with the hard sciences and engineering falling near the bottom of the pack, which is not entirely surprising based on the cultural presupposition connecting creativity and the arts (Azzam, 2009; Runco & Bahleda, 1986). People perceive the artistic and creative identity to be somewhat synonymous, and therefore one might expect those choosing to major in the arts (and who have artistic ability) to be more receptive to creativity-related course

tasks and assignments as well. Other studies that have compared majors on creative behaviors and interests have found similar advantages among arts and humanities majors (Charyton & Snelbecker, 2007; Eisenman, 1969; Kelly & Kneipp, 2009; Miller & Smith, 2014). This increased exposure to creative coursework may be especially valuable for arts majors, as they are more likely than all but business majors to have plans for starting their own business someday, and more likely than all other majors to plan for eventual self-employment (Miller, Dumford, Gaskill, Houghton, & Tepper, 2016). Developing their approaches to creative thinking will be important in achieving success along their nontraditional career paths. However, major may have a more complicated relationship with creativity, as pre-existing tendencies might play a role in choosing a certain major (Kaufman, Pumacahua, & Holt, 2013), and then advanced study in that field may reinforce and strengthen these tendencies.

Given these differences between majors, it is imperative to take them into consideration when examining the relationships between creative coursework and other constructs, including confidence in skill development. Even after controlling for major, as well as several other demographic and institutional characteristics that are known to influence the educational experience, creative coursework was still able to significantly predict confidence in several crucial transferable skills. Not surprisingly, exposure to creative coursework was a significant positive predictor of confidence in creative thinking skills, explaining 12.6% of the variance even after controlling for other factors. However, creative coursework was also able to explain just as much of the variance in confidence in networking skills (12.8%), as well as non-trivial amounts for critical thinking (11.0%) and entrepreneurial skills (8.7%). These transferable skills are all important for students

to have and can promote success in their future careers. Not only will students be more marketable to employers (Stasz, 1997), with an ability to adapt to the changing needs of a fast-paced economy, but those taking the more non-traditional routes of self-employment and owning their own business can directly benefit from these skills as well (Watson, 2012). The significant findings for the other variables in the models also provide further support for the use of comprehensive models when exploring these types of constructs within higher education settings and beyond.

More recently, there has been a call for enhanced entrepreneurial training for arts majors, and a strong argument for curricular revisions has led to some changes in policies (Hong et al., 2012). Given their future career plans, this addition to the curriculum should have positive impacts on career outcomes for those majoring in the arts. However, exposure to creativity training can be beneficial for all majors, not just those in the arts. As creativity is an increasingly vital skill, colleges and universities have taken explicit steps to promote it both across disciplines (American Association of Colleges and Universities, 2010) as well as within specific fields such as engineering where it is seen as essential but potentially lacking (ABET, 2011). Exposure to creative coursework is a significant predictor of confidence in not only creative thinking, but also critical thinking, entrepreneurial skills, and networking skills. Changes in the global job market and in the relationships between employers and employees have made these skills even more necessary, and today's students (who are tomorrow's workers) may find themselves in need of these diverse and adaptable abilities (Cornfield, Campbell, & McCammon, 2001). Advances in the speed and type of communications have global implications, and workers may be reliant on others from all around the world to inform their work. Even those students that take a more

traditional career route after graduation can derive value from participating in creative coursework and applying these skills in their non-work lives, as research suggests a link between creative engagement and well-being (Csikszentmihalyi, 1996).

### **Limitations**

Although there are many informative aspects of this study, there are some limitations to note. First, although the sample includes a wide range of students attending multiple institutions, it may not be representative of all students at all universities. Since participation in NSSE is voluntary for institutions, they are neither selected randomly nor do they create a representative sample of institutions, although they generally mirror the national picture of U.S. higher education (NSSE 2015 Overview, 2015; NSSE 2016 Overview, 2016). The lower response rate could also be a potential source of bias in the sample, although previous research suggests that studies with lower response rates can still maintain adequate response representativeness (Fosnacht, Sarraf, Howe, & Peck, 2017; Lambert & Miller, 2014). Furthermore, given the research design, this study was unable to test for causal relationships between creative coursework exposure and skill confidence. The results can only confirm whether or not these constructs are associated. Finally, while this research has the advantages of large sample size and ease of online data collection, it does rely on self-reported measures, which may not always be objective. However, most studies looking at self-reports of students in higher education suggest that self-reports and actual abilities are positively related (Anaya, 1999; Hayek, Carini, O'Day, & Kuh, 2002; Pike, 1995), and social desirability bias does not play a major role in student responses for surveys of basic cognitive and academic behaviors (Miller, 2012).

### Future Directions & Conclusions

Despite these limitations, there are many noteworthy contributions of this study. These findings provide a springboard for future research on the topic. Longitudinal research might explore the continued benefits of creative coursework for these graduating students, following up to investigate both their own and their employers' (or clients') perceptions of how they are using transferable skills in their careers. Additionally, it is important to replicate this research with samples outside the United States, as educational systems and curricular structure vary greatly across the globe. The field may also benefit from case studies or action research that focus on selected institutions that are performing well when it comes to creative coursework and the development of transferable skills, noting specific practices that others who are seeking to improve in these areas might adopt.

In general, the results suggest that increased integration of creativity into coursework is beneficial for students across academic disciplines. Arts majors are currently at an advantage for exposure to creative coursework, but even students in non-arts fields can gain from elements of creativity in the curriculum. Faculty in all departments could be encouraged to include more open-ended research and inquiry projects on topics of interest (Renzulli, 1986), as research indicates that these have a variety of positive outcomes, not only in elementary and secondary education but also at the undergraduate level (Syer, Chichekian, Shore, & Aulls, 2013). Additionally, institutions could begin to develop innovative interdisciplinary curricula that encourage creative potential (Dohn, Pepper, & Sandgren, 2005). A first step in these curricular adaptations might be "retraining" students on the idea of having more than one single right answer, emphasizing that more than one right answer can exist and that learning takes place

during the process of trial and error.

Incorporating elements of creativity into coursework for all disciplines can have further impact on confidence in skill development, as the results of this study suggest, and this will assist students as they graduate, enter the workforce, and begin contributing to the economy.

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