



Bryant University

HONORS THESIS

Examining the Relationship Between All-Female Education and Work Outcomes

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ABSTRACT

This thesis is aimed at studying the long-term impact an all-female secondary education has on work outcomes. Most of the current research on an all-female education pertains to current secondary students or those who are in college. There are minimal studies that analyze if one's educational environment has a long-term influence on their career. This study hypothesized that an all-female secondary education has a long-term impact on job satisfaction, job performance, and job engagement. This impact is manifested through the Big 5 personality traits of conscientiousness and extraversion, as well as the multifaceted personality trait Core Self Evaluation (CSE). While we know that a significant portion of traits are inherited, one's environment also significantly impacts personality. Through the collection of survey data from females of both single gender and traditional educational backgrounds ($n = 309$), this study quantitatively analyzed the long-term impact of an all-female education on a student's career. A multiple regression approach through the Preacher and Hayes (2004, 2008) process macro was used to test both the direct and indirect relationships in the model. Results indicated that while there was no significant relationship between all-female education and job satisfaction or job performance, an indirect relationship did exist with job engagement through the Big 5 personality trait extraversion. Supplementary analyses revealed that the means were significantly different (and higher) for job satisfaction, job performance, job engagement, and extraversion for the all-female educated sample when compared to the co-educated sample.

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INTRODUCTION

Currently, there is limited research on the long-term effects of single-gender education, especially in a corporate or professional environment. As someone who graduated from an all-female high school, I feel it would be beneficial to further understand the long-term impact of the environment in which a person is educated. While there are studies on traits and behaviors of females educated in a single-gender environment, there is little to no research that goes beyond the physical classroom and applies to a student's long-term career. The currently limited research in this area has resulted in a narrow scope on the subject of all-female education post-graduation. The aim of this research was to contribute to the current literature on all-female education, as well as open the door for future studies analyzing the long-term impacts of this educational environment.

This study explores the relationship between all-female education and work outcomes. This relationship is analyzed through three key dimensions: the multifaceted personality trait Core Self-Evaluation (CSE), which encompasses the four traits including: self-esteem, self-efficacy, emotional stability, and locus of control, along with the Big 5 personality traits conscientiousness and extraversion. CSE has been shown to be an important personality variable for work outcomes (Erez & Judge, 2001). The Big 5 personality dimensions of conscientiousness and extraversion have also been shown to have an effect on both job performance and job satisfaction (Hurtz & Donovan, 2000), as well as job engagement (Kim, Shin, & Swanger, 2009). Through survey analysis which compared an all-female educated sample of respondents with a co-educated female sample, I was able to determine if these personality traits are fostered at a higher level in the all-female educated group and if these

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effects transmit into higher perceptions of job satisfaction, job performance, and job engagement.

LITERATURE REVIEW

Personality

Personality is defined as an individual's characteristic patterns of thought, emotion, and behavior, along with the psychological mechanisms behind those patterns. It seeks to bring together contributions from developmental, social, cognitive, and biological psychology to understand how people differ (Funder, 2001). Today, personality is seen as a key factor in the prediction of both career and life satisfaction (Lounsbury, Park, Sundstrom, Williamson, & Pemberton, 2004). Research attributed to personality and organizational behavior is often divided into two phases (Barrick, Mount, & Judge, 2001). The first phase, taking place between the 1900s and mid-1980s, involved researchers evaluating relationships of individual scales of personality inventories to aspects of job performance. This phase concluded with the understanding that personality and job performance did not share a relationship. The second phase, taking place from the mid-1980s to present day, is primarily focused on the Five Factor Model (FFM) or Big 5 (Barrick et al., 2001). A common measure of the FFM is the NEO Personality Inventory which measured each of the dimensions of the Big 5 (McCrae & Costa, 1994). Studies related to this phase have concluded that particular aspects of personality are related to job performance (Day, & Silverman, 1989). During its second phase of research, the impact of personality on personal outcomes appeared more optimistic due to the meta-analytic studies of the FFM (Barrick et. al., 2001).

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The Big 5

Also known as the Five-Factor Model (FFM), the Big 5 consists of five broad dimensions of personality (Barrick & Mount, 1991). The five dimensions consist of conscientiousness, emotional stability (vs. neuroticism), agreeableness, openness to experience, and extraversion (Goldberg, Hughes, Merenda, & Sweeney, 1996). Conscientiousness refers to the degree to which a person is careful, thorough, responsible, organized, and scrupulous (Roccas, Sagiv, Schwartz, & Knafo, 2002). Out of the Big 5, it is the trait that holds the highest correlation to job performance (Hurtz & Donovan, 2000). It is also highly correlated with job satisfaction, as it represents a general work involvement tendency (Judge, Heller, & Mount, 2002). Job engagement has also been shown to have a positive relationship to task performance in individuals who exhibit high levels of conscientiousness (Bakker & Demerouti, 2012).

Emotional stability, the inverse of neuroticism, refers to the degree an individual is calm and poised (Roccas et. al., 2001). Individuals who exhibit high neuroticism, (the inverse of emotional stability), put themselves in situations that foster negative effect. If these relate to work, they could relate to diminished levels of job satisfaction (Judge et al., 2002).

Extraversion represents the degree to which individuals are sociable, talkative, assertive, active, and exhibit positive emotions (Roccas et. al, 2001). Extraversion has been found to predict job performance, especially in jobs characterized by social interaction (Rothmann & Coetzer, 2003). Extraversion additionally has been correlated with predicting job satisfaction (Judge, Heller, & Mount, 2002). Job engagement has also been associated with motivational elements of emotional stability, and energized forms of conscientiousness and extraversion (Inceoglu & Warr, 2011). Agreeableness reflects individuals who tend to be good-natured, compliant, modest, gentle, and cooperative. Lastly, Openness to experience refers to

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individuals who are intellectual, imaginative, sensitive, and open-minded (Roccas, et. al., 2002). Both agreeableness and openness to experience are expected to have weak relationships with overall job performance (Barrick et. al., 2001).

Of the Big 5 personality traits, extraversion and conscientiousness appear to have the strongest correlations to job satisfaction measures. These traits also have high correlations to life satisfaction (Judge, et, al., 2002). Regarding job performance, studies show that it is highly correlated to conscientiousness and extraversion (Barrick & Mount, 1991).

Conscientiousness has also been significantly related to work engagement (Argarwal & Gupta, 2018). A 2003 study of the Big 5 also indicated that extraversion and conscientiousness were both associated with task performance and creativity. The study further found that these two traits predict job performance in various occupations (Rothmann & Coetzer, 2003).

Core Self-Evaluation (CSE)

Core self-evaluation (CSE) is a broad personality trait that is comprised of four individual traits (Judge, 2009). The theory began with the writings of Edith Packer in the 1980s. Packer argued that evaluations of situations are affected by fundamental appraisals known as core evaluations (Chang, Ferris, Johnson, & Rosen, 2012). The theory itself was further developed and defined as the “fundamental premises that individuals hold about themselves and their functioning in the world” (Johnson, Rosen, & Levy, 2008, p. 391).

The four traits in the theory include self-esteem, locus of control, self-efficacy, and emotional stability (or neuroticism) (Kacmar, Collins, Harris, & Judge, 2009). These traits adhere to three attributes of dispositional traits that exhibit one’s CSE. The attributes include evaluation focus, fundamentality, and scope (Chang et. al., 2012).

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Self-esteem involves an appraisal of one's self-worth as well as their overall self-evaluation of their competencies (Rosenberg, 1965). This trait is generally formed by the end of adolescence and is considered stable and not easily modified (Tharenou, 1979). Self-esteem is considered to be the most fundamental manifestation of CSE because it represents the overall value one places on themselves (Judge et. al., 2001). Locus of control (LOC) is the belief a person has that they control their own fate (Change et. al., 2012). It measures individuals on two different ends of a spectrum. Individuals with an internal LOC believe their successes, failures, and outcomes are controlled by their own actions and behaviors. Individuals with an external LOC believe their outcomes are controlled by factors like chance and fate (Karimi & Aliour, 2011). Internal LOC has been positively related to job performance and satisfaction (Spector, 1982). Generalized self-efficacy describes one's judgement of their ability to perform a given task (Change et. al., 2012). Studies indicate that it shares a correlation with job performance (Judge, Erez, & Bono, 1998). Lastly, emotional stability is a trait that is shared between both CSE and the Big 5. It is defined as the extent to which an individual feels calm and secure as well as how they react to everyday occurrences in their life (Change et. al., 2012).

Regarding the relationship between job performance with CSE, it is argued that individuals with high CSE scores are more motivated to perform their job-related tasks, and motivation is consequently a major determinant of job satisfaction. For this reason, motivation has been seen as a mediator between CSE and performance (Judge, Heller, Mount, 2002). CSE also influences job satisfaction. Research has indicated that people with higher scores are generally more positive individuals who perceive complexity as intrinsically fulfilling (Bono & Judge, 2003). CSE has also been linked to job engagement. A 2015 study found that "highly self-

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evaluated employees are more likely to engage in their work” as they have a meaningful place to execute the high objectives they set for themselves (Hanif, Naqvi, & Hussain, 2015).

CSE is measured both directly and indirectly. The initial approach used to evaluate CSE was an indirect one. With this approach, each individual trait would be studied separately and then joined to form an overall analysis of CSE. In recent years, direct approaches have been developed that study CSE as an integrated framework. The most notable direct approach is the Core Self Evaluation Scale (CSES) that was developed in 2003 by Judge, Erez, Bono, and Thoresen. The CSES features 12 statements - six positive, and six negative – that determine a composite CSE score (Judge, Bono, & Thoresen, 2003). Individuals rate how much they agree or disagree with each statement on a 5 point scale and an aggregate score is calculated. It has been determined that the CSE 12-item scale should be used when the composite score is a better research measure and when participant time is limited (Gardner & Pierce, 2009).

Heritability of Traits

While environmental factors do contribute to the personality traits an individual exhibits, there are also studies that show personality has a significant genetic effect on individual differences in traits. A 2015 study found that 39% of individual differences in personality were due to heritability, and the remaining 61% were attributed to environmental effects (Vukasovic & Bratko, 2015). Another study conducted with twin participants found that conscientiousness’ genetic influence was estimated at 44%, while extraversion was attributed 53% to heritability (Jang, Livesley, & Vernon, 1996). When compared with work outcomes, a 2003 study on the heritability of job satisfaction using the five-factor model (Big 5) found that the Big 5 had a low mediation effect (24%) on the genetic variance in job satisfaction (Ilies & Judge, 2003).

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While there is not much research on heritability of the multifaceted trait of core-self evaluation, the specific traits that make up CSE have been linked to both genetic and environmental factors. For example, emotional stability is a widely studied trait that shared by the Big 5 and CSE. Another study found that self-efficacy is significantly attributed to genetic factors (Waakataar & Torgersen, 2013). As the highly debated topic of nature versus nurture continues to be studied, the understanding of the environmental and genetic effects on trait development proceeds to be further defined. A theory known as interactionism, further illustrates this idea as the interaction between a person's genetics and situational factors join together to exhibit different behaviors and outcomes in an individual (Ekehammar, 1974). Consequently, my thesis explored how an all-female education can foster (i.e. "nurture") the positive development of these traits regardless of the level of these traits individuals might genetically be predisposed to have (i.e. "nature").

All-Female Education

Although there has not been extensive research on the long-term effects of an all-female education, there is some research pertaining to students who are currently studying in a single-gender environment. A recent study used data collected from over 1,000 incoming college freshmen who attended over 100 independent all-girls high schools through the national CIRP Freshmen Survey which was administered by the Higher Education Research Institute (HERI). This research has determined that students who attend all female institutions exhibit stronger academic skills, higher self-confidence, increased political engagement, as well as a strong passion for community involvement (Lim & Riggers-Piehl, 2018). Moreover, students who attend all female institutions have a high tolerance for opposing beliefs and are more open to hearing ideas that differ from their own (Sax, Arms, Woodruff, Riggers, & Eagan,

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2009). Additionally, an increasing amount of public schools are offering students single-gender options for education as this may be more beneficial to students (Salomone, 2006).

Regarding self-concept, studies show that students who are educated in a single-gender environment are more likely to have an internal locus of control and overall higher self-concept compared to co-educated students (Lee & Bryk, 1986). Studies also indicate the self confidence is high in areas of science and mathematics (g, Lim, Riggers-Piehl, 2018).

Additionally, 60% of students consider themselves to be “above average” with intellectual self-confidence (Holmgren, 2014). Both these findings indicate that the environmental impact of an all-female education can have a positive influence on one’s self concept or CSE. Self-esteem and locus of control make up two of the four components of this broad personality dimension. The studies above indicate that females educated in a single gender environment manifest significant differences in the levels of these traits.

In terms of academic achievement, women who attended all-female schools outperform their co-educated peers on a variety of metrics such as SAT scores (Sax et. al., 2009). Additionally, all-female educated students tend to spend more of their free time on academics (Sax et. al., 2009). Moreover, a 2013 University of Essex study found that exposure to one hour of all-female education a week increases a student’s likelihood to pass their second year of high school by 10% (Booth, Cardona, & Nolen, 2013). There are studies that link high academic achievement to higher levels of conscientiousness. A 2007 study linked a relationship between conscientiousness and a student’s GPA (Wagerman, & Funder, 2007). Another study found that extraversion had a positive association with achievement motivation. (Komarraju, Karau, & Schmeck, 2009).

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A 2014 study found that all-female educated students have a higher interest in graduate school than their co-educational peers (Holmgren, 2014), and another found that students have greater career aspirations (Watson., Quatmann, & Edler, 2002). Ninety nine percent of students at all-female institutions expect to earn a college degree, and over 2/3 of these individuals expect to earn graduate degrees. Research also indicates that all-female educated students strongly agree they are “motivated by their desire to succeed” and their desire to learn outside of school (Holmgren, 2014). Moreover, a 2005 study conducted by the United States Department of Education found positive effects for students educated in a single-sex environment in areas such as selection of college major, locus of control, and achievement in mathematics and science. However, the study also found that there were unfavorable effects on students in other areas such as self-esteem (Mael, Alonso, Gibson, Rogers, & Smith, 2005).

Overall, there is limited research on the long-term effects of all-female education, and most of the current research has developed over the last 20 years as there was not a strong focus on this area throughout the 20th century (Anfara, & Mertens, 2008). Moreover, there is little research on the effects of single gender-education past college entry (Sax, Arms, Woodruff, Riggers, & Eagan, 2009). This has left public schools, parents, and researchers continuing to question if there is a notable long-term benefit of an all-female education, and if so, how profound that impact might be.

Job Satisfaction, Job Performance, & Job Engagement

Job performance refers to role prescribed behavior that contributes to the organization. It is a combination of knowledge, motivation, skills, and ability (Zyphus, Chaturvedi, & Avery, 2008). Job performance can be affected by both situational and dispositional factors

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(Rothmann & Coetzer, 2003). Job satisfaction refers to the degree to which employees have a positive affective orientation towards employment by the organization (Gaertner & Robinson, 1999). It has been linked with leading to recognition, income, promotion, and other advancement goals (Aziri, 2011). Job engagement is a persistent and positive affective state of fulfilment in employees that can be characterized through vigor, dedication, and absorption (Wefald & Downey, 2009). Engaged individuals are attentive, connected, and focused on their role performance within an organization (Rich, Lepine, & Crawford, 2010).

The Big 5 personality dimensions, conscientiousness and extraversion have an impact on job performance, job satisfaction, and job engagement. Conscientiousness assesses personal characteristics that are important for carrying out work related tasks such as an individual being hardworking, responsible, and careful (Barrick & Mount, 1991). Additionally, it is understood that an individual with high conscientiousness would have greater achievement in academic and professional life than individuals with low degrees of the dimension (Gardner & Pierce 2010). The Big 5 dimension of extraversion has been linked to job engagement as both concepts share high energy and vigor (Kim, Shin, & Swanger, 2009). Another study found extraversion to be linked to job satisfaction through the enthusiasm facet of extraversion (Harari, Thompson, & Viswesvara, 2018).

CSE is also key indicator of job performance and satisfaction (Judge, Erez, Bono, & Thoresen, 2003; Erez & Judge, 2001). One of the first studies involving CSE theorized it had a positive impact on perceptions of work characteristics, job satisfaction, and life satisfaction (Judge, Locke, Durham, Kluger, 1997). Furthermore, a 1998 study by Judge, Locke, Durham, and Kluger indicated similar findings. Researchers noted “The way in which people see themselves affects how they experience their jobs and even their lives” while also

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acknowledging that self-esteem and self-efficacy contributed the most significantly to one's overall CSE (Judge et. al., 1997). In another study, Judge and Bono suggest that the traits that comprise CSE are among the best dispositional predictors of both job satisfaction and performance (Judge & Bono, 2001). A study also found that CSE and job engagement shared an indirect relationship with job insecurity having a moderating effect (Yoo & Lee, 2019). While there is currently no research that formally links all-female education to the work outcomes of job performance, job satisfaction, and job engagement, there are shared traits that affect the variables. For example, students who attend all-female institutions are more likely to have a positive self-concept, internal locus of control, and higher self-esteem and self-confidence in certain academic areas. Students also exhibit a higher motivation to learn outside of the classroom than their co-educated pairs. These findings coincide with the Big 5 personality traits conscientiousness and emotional stability as well as CSE. This study intended to analyze if there is a relationship between all-female education and job performance, job satisfaction, and job engagement, and to what extent this relationship is mediated through the Big 5 traits extraversion and conscientiousness, and CSE.

RESEARCH QUESTIONS & HYPOTHESES

Research Questions

1. How does the education type of the secondary school environment (all-female vs. co-ed) influence the development of the personality traits of CSE, conscientiousness, and extraversion?

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2. What effect does all-female education have on work outcomes?

Hypotheses

The question regarding nature vs. nurture has long been studied in developmental psychology to understand if, and to what extent, situational factors have on an individual's personality as opposed to genetic and biological characteristics. In 2010, Arnold Sameroff developed a unified theory of development to explain the interaction between nature and nurture. This theory includes four models: personal change, contextual, regulation, and representational (Sameroff, 2010). My study on the impact of all-female education focuses specifically on the contextual model of the unified theory. The contextual model describes the various experiences that either augment or constrain individual development (Sameroff, 2010). This model theorizes that an individual's experiences with their family, school, peers, community, etc. all contribute to their overall development. These changing environments include both the settings and larger social contexts (formal and informal) in which the settings are embedded (Bronfenbrenner, 1977).

Current research on all-female education has suggested that students educated in a single-gender environment exhibit stronger academic performance, increased self-confidence, as well as a strong passion for community involvement (Lim & Riggers-Piehl, 2018). Therefore, this study will hypothesize that an all-female educational environment impact's an individual's development.

Studies have indicated that all-female educated students demonstrate higher levels of academic achievement on metrics such as test scores, and pass rates (Booth, et. al., 2013). The relationship between the Big 5 trait of conscientiousness and academic achievement has also shown a link between the variable and a student's GPA (Wagerman, et. al, 2007). Another

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study found that students educated in an all-female environment have higher career aspirations and are motivated by a desire to succeed (Holmgren, 2014). Extraversion has been linked to higher levels of motivation and interpersonal engagement (Depue & Collins, 1999). Moreover, studies have indicated that conscientiousness and achievement motivation share a positive correlation, and thus predict performance (Richardson & Abraham, 2009).

Hypothesis 1: All-female education has a positive influence on the development of the trait conscientiousness.

Hypothesis 2: All-female education has a positive influence on the development of the trait extraversion.

Studies have also shown that an all-female educational environment fosters an overall higher self-concept and internal locus of control when compared to co-educated peers (Lee & Bryk, 1986). All-female educated students also rated themselves as “above average” in terms of intellectual self-confidence, (Holmgren, 2014). Another study conducted by the U.S. Department of Education found that single-gender education had a positive impact on students in areas related to locus of control and college major selection (Mael, et. al., 2005). These findings all aid in demonstrating that the environmental impact of an all-female education can have a positive relationship to one’s self concept or CSE.

Hypothesis 3: All-female education has a positive influence on the development of the global trait of core self-evaluation.

Research has indicated the influence of the Five Factor Model (Big 5) and core-self-evaluation on work outcomes. Specifically, these traits are positively related to job satisfaction, job performance, and job engagement. Individuals who exhibit higher levels of the Big 5 trait conscientiousness are known to exhibit higher levels of job satisfaction, job

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performance, and job engagement as they experience greater levels of achievement, responsibility, and carefulness (Barrick & Mount, 1991).

Hypothesis 4(a): Conscientiousness has a positive influence on job satisfaction.

Hypothesis 4(b): Conscientiousness has a positive influence on job performance.

Hypothesis 4(c): Conscientious has a positive influence on job engagement.

The Big 5 trait of extraversion has also been proven to have a positive influence on job satisfaction, job performance, and job engagement. Individuals with high levels of the trait exhibit higher levels of job satisfaction, job performance, and job engagement as it leads to increased enthusiasm (Harari, Thompson, & Visesvaran, 2018) and social interaction (Huang, Reed, & Mengqiao, 2016).

Hypothesis 5(a): Extraversion has a positive influence on job satisfaction.

Hypothesis 5(b): Extraversion has a positive influence on job performance.

Hypothesis 5(c): Extraversion has a positive influence on job engagement.

Lastly, studies have shown that core self-evaluation (CSE) is a positive indicator of job performance, job satisfaction, and job engagement. CSE represents an individual's reflection on themselves and their work. For this reason, the way one perceives themselves will have an active impact on how they experience their job and career. Thus, higher levels of CSE will positively impact one's perception of their job performance, job satisfaction, and job engagement.

Hypothesis 6(a): Core self-evaluation has a positive influence on job satisfaction.

Hypothesis 6(b): Core self-evaluation has a positive influence on job performance.

Hypothesis 6(c): Core self-evaluation has a positive influence on job engagement.

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In conclusion, I argue that all-female education leads to higher levels of the Big 5 personality traits consciences and emotional stability, as well as the multifaceted trait, core self-evaluation. These traits have all been shown to link to outcomes of job satisfaction, job performance, and job engagement. Therefore, I am arguing that an all-female educational environment directly leads to the following positive work outcomes as well as indirectly through the development of three personality traits.

Hypothesis 7(a): All-female education has a positive influence on perceptions of job satisfaction.

Hypothesis 7(b): All-female education has a positive influence on perceptions of job performance.

Hypothesis 7(c): All-female education has a positive influence on perceptions of job engagement.

Hypothesis 8 (a): Conscientious mediates the relationship between all-female education and job satisfaction.

Hypothesis 8 (b): Conscientious mediates the relationship between all-female education and job performance.

Hypothesis 8 (c): Conscientious mediates the relationship between all-female education and job engagement.

Hypothesis 9 (a): Extraversion mediates the relationship between all-female education and job satisfaction.

Hypothesis 9 (b): Extraversion mediates the relationship between all-female education and job performance.

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Hypothesis 9 (c): Extraversion mediates the relationship between all-female education and job engagement.

Hypothesis 10 (a): Core self-evaluation mediates the relationship between all-female education and job satisfaction.

Hypothesis 10 (b): Core self-evaluation mediates the relationship between all-female education and job performance.

Hypothesis 10 (c): Core self-evaluation mediates the relationship between all-female education and job engagement.

A theoretical model depicting these hypothesized relationships is displayed in Figure 1.

METHODS

Participants and Procedure

An online survey was created and distributed through various social media platforms ($n = 309$). The majority of all-female educated responses were collected through a post regarding the survey on a private alumni Facebook group for an all-female K-12 parochial school in Rhode Island. Data was collected over a 4-week period from August 13, 2020 – September 8, 2020. A total of 210 responses were collected from graduates of all-female institutions and 99 responses were collected from female graduates of co-educational institutions. The majority of the co-educated (75%) sample attended public secondary schools.

Participants ages ranged from 19 - 84 years old with a mean age of 40 years old ($S.D. = 13.3$).

The majority of participants identified as White (92.2%), a small number identified as Hispanic (2.9%), African American (1.3%), and Asian (1.0%). The majority of participants have obtained either a bachelors or master's degree (40.1% and 30.1% respectively). 14.2% earned a doctorate or professional degree, and 14.9% hold an associate's degree or lower. The

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majority of participants were employed by an organization (81.2%), and 10.1% of the sample is currently unemployed (3.6% not by choice). Participants were employed with their current organization for an average of 7.8 years (*S.D.* = 8.4). The mean salary level for participants was between \$80,000 - \$125,000. The majority of survey respondents (55.7%) have a household income above \$80,000. The most common household income level of participants (19.4%) was between \$175,000 - \$225,000.

Measures

All measures were rated on a 5-point Likert-based scale with strongly agree (5) as the highest measure, strongly disagree (1) as the lowest measure, and neutral (3) in the middle. Following answers demographic questions, participants were asked to complete scales for job satisfaction, job performance, job engagement, the Big 5, and CSE.

Job Satisfaction. Job satisfaction was measured from a 3-statement scale developed by Cammann (Cammann et al., 1983). The scale assesses a participant's overall satisfaction with their work as a whole. The Cronbach's alpha for the scale was 0.81. A sample item includes "All in all, I am satisfied about my job".

Job Performance. Job performance was assessed through a single-item measure which asked participants to measure their level of job performance compared to individuals at their company in similar positions (ranging from "much weaker" to "much stronger").

Job Engagement. Job engagement was measured through the UWES-9 scale (Schaufeli, Bakker, & Salanova, 2006). This 9-item scale assessed a participant's vigor, dedication, and absorption in their work. The Cronbach's alpha for the scale was 0.89. A sample item includes "At my work, I feel bursting with energy".

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The Big 5. A NEO scale with positively worded items was used to assess participants on each of the Big 5 personality traits (neuroticism, extraversion, openness to experience, extraversion, agreeableness, and conscientiousness). For each trait, participants were asked to answer the extent to which they agreed or disagreed in their average daily with five statements. Participants were told to respond to each statement with an honest assessment of how they see themselves compared to others of their same-sex and same age. The Cronbach's alpha was 0.81 for conscientiousness and 0.84 for extraversion. A sample item for conscientiousness includes "Am always prepared". A sample item for extraversion includes "Feel comfortable around people".

Core Self-Evaluation. To assess participant's CSE, a 12-item measure developed by Judge was utilized (Judge, Erez, Bono, & Thoresen, 2003). Participants were asked to rate the extent to which they agree or disagree with each statement on a 5-point scale. Each of the 12 statements related to one of the four individual traits that make up CSE. These include emotional stability (neuroticism), locus of control, self-esteem, and self-efficacy. The Cronbach's alpha for the scale was 0.84. A sample item includes "I am confident I get the success I deserve in life".

Control Variables. I collected demographic variables pertaining to the participants age, ethnicity, salary, current household income, household income when they were growing up (SES), education level, organizational tenure, and work situation. These variables were tested on the three outcome variables. Only organizational tenure and SES were significantly related to the outcome variables. Thus, these two demographic variables were retained as statistical controls and treated as covariates in the model.

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Qualitative Data. Qualitative data was also collected from survey respondents. The all-female educated sample was asked to share how they felt their all-female education impacted their life and work. These quotes were used in the analysis of the study.

Data Analysis

Table 1 displays the descriptive statistics and correlations. The hypothesized model was tested using the SPSS and the Preacher and Hayes (2004, 2008) based PROCESS macro version 3.4 for moderation analysis. This regression-based approach allowed me to test both the direct and indirect (mediation) relationships in the model. Following Preacher and Hayes (2008), bootstrapping procedures were utilized with 5,000 samples to place a 95% confidence interval around the estimates of the indirect effect.

Results

Hypothesis 1 stating that all-female education has a positive impact on conscientiousness was not supported ($B=.02$, n.s.), however Hypothesis 2 was supported as all-female education was positively related to extraversion ($B= .28$, $p <.01$, CI [.09, .47]). Hypothesis 3 stating that all-female education lead to higher levels of core self-evaluation, was also not supported ($B=.06$, n.s.). Hypotheses 4a ($B=-.03$, n.s.) and 4c ($B= -.04$, n.s.), linking conscientiousness to job satisfaction and job engagement were not supported. Hypothesis 4b, however, was supported indicating a relationship between conscientiousness and job performance ($B = .26$, $p <.01$, CI [.07, .46]). Both Hypothesis 5a ($B=-.08$, n.s.) and Hypothesis 5b ($B=.13$, n.s.) were not supported indicating no relationship between extraversion and job satisfaction and job performance. Hypothesis 5c was supported as extraversion was related to job engagement ($B = .20$, $p <.01$, CI [.10, .30]). A relationship between core self-evaluation and job satisfaction

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was indicted ($B = .24, p < .01, CI [.06, .43]$), thus supporting Hypothesis 6a. Core self-evaluation was not found to have a relationship with job performance or job engagement, indicating that Hypothesis 6b ($B = .04, n.s.$) and Hypothesis 6c ($B = .09, n.s.$) were not supported.

There was no direct effect of all-female education on job satisfaction, job performance, and job engagement as Hypotheses 7a ($B = -.02, n.s.$), 7b ($B = .09, n.s.$), and 7c ($B = .11, n.s.$) were not supported. Conscientiousness did not mediate a relationship between all-female education and the work outcomes job satisfaction, job performance, or job engagement, thus not supporting Hypotheses 8a, 8b, and 8c. Hypotheses 9a and 9b were not supported, indicating that extraversion did not mediate the relationship between all-female education and job satisfaction and job performance. However, Hypothesis 9c was supported, indicating that while all-female education did not directly influence job engagement, this effect was indirectly transmitted through the development of the trait extraversion, of which higher levels had a positive influence on perceptions of job engagement (indirect effect = $.06, 95\%, CI [.017, .110]$). Lastly, there was no mediating effect of core self-evaluation on all-female education and the outcomes of job satisfaction, job performance, and job engagement, thus not supporting Hypotheses 10a, 10b, and 10c.

While the hypothesis testing above suggests that all-female education has a positive influence on the development of extraversion, which in turn led to positive perceptions of job engagement, I chose to conduct additional analysis to see if women who attended all-female educational institutions were significantly different than women educated in a traditional coed environment. Thus, in a supplementary analysis, I conducted an Independent Samples T-test to compare the group means of the model variables (traits and work outcomes). The results of

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the T-test indicate that the mean scores of women who attended all-female educational institutions were higher for job satisfaction (mean difference = 0.20, $p < .05$), job engagement (mean difference = 0.28, $p < .001$), extraversion (mean difference = 0.33, $p < 0.001$), and job performance (mean difference = 0.20, $p < 0.05$) than the co-educated sample. This analysis highlights that while only a few hypotheses of this study were supported, there is enough evidence to suggest that all-female education does matter. Not only does an all-female educational environment have a positive influence on the development of the Big 5 trait extraversion, and in turn, positive perceptions of job engagement, but it also indicates that women who attended all-female institutions are significantly different – in a positive way – from women who attended traditional coeducational institutions.

DISCUSSION

This study examined the potential long-term impact an all-female education can have on an individual's work outcomes. Results of the study indicated all-female education does have an influence on an individual's long-term career. Specifically, results indicated that all-female education indirectly related to higher levels of job engagement through the Big 5 personality trait extraversion.

Previous studies on single-gender education have found that students educated in an all-female environment had higher levels of academic engagement, political engagement, and community involvement than their co-educated peers (Sax, Arms, Woodruff, Riggers, & Eagan, 2009). All-female education has also been noted to lead to higher long-term aspirations and motivation in students (Holmgren, 2014). Studies have also found current students to be “more likely to engage in activities that prepare them for the real world”. The

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same study also found all-female educated students to be more likely to “feel more comfortable being themselves and expressing their ideas” (Holmgren, 2014, p. 5, 9). These findings all exhibit manifestations of the trait extraversion which can be exhibited through both ambition and sociability (Trapmann, Hell, Hirn, & Schuler, 2007).

The social development created in an all-female environment can have a long-term impact on one’s ability to assert their voice in future endeavors beyond the academic realm. Studies have found that extraverts seek activities and interactions that promote leadership. (Deventer, et. al., 2019). Research released by the National Coalition of Girls’ Schools further suggests that students are given a larger platform to exercise their voice in an all-female educational environment. A national survey found that 87% of all-female educated students feel their voices & opinions are respected compared to only 58% of female students at co-educational schools (National Coalition of Girls’ Schools). Additionally, leadership opportunities for students attending all-female institutions are solely held by a single gender. The Coalition argues that this environment fosters a message for girls to “learn, grow, and develop” (National Coalition of all Girls’ Schools).

Qualitative data obtained in survey research for this study also found that many respondents indicated that their prior experience in an all-female educational environment led to higher levels of extraversion in their current occupations. When respondents were asked to write how they felt their all-female education influenced their work life, many responded by attributing their all-female education to current traits such as assertiveness, outgoingness, confidence, a tendency to “speak-up” and self-advocate, as well as increased leadership abilities. Selected quotations include:

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“By attending an all female middle/high school I was allowed to be myself in the classroom which then allowed me to be more assertive and outgoing outside of high school.”

“The environment also trained me to speak my mind regardless of who was in the room, provided my opinion was well-researched, thoughtful and compassionate. I carry these fundamentals with me in my career.”

“An all female environment greatly influenced my ability to speak up in the workplace and be undeterred by both the age and gender of my colleagues and superiors.”

“I truly believe the all-female education I received provided me the ability to rise up and make sure my voice was heard and my contributions considered fairly.”

Both statistical and qualitative findings suggest that an all-female educational environment leads to higher levels of extraversion, which in turn leads to higher levels of job engagement. Highly engaged individuals exhibit positive dedication, fulfilment, overall enthusiasm to their careers. Overall, high levels of job engagement is seen in individuals who work harder, are enthusiastic and invested in their work, and who perceive the significance of work for more than monetary fulfilment (Sharoni, Shkoler, & Tziner, 2015). Through exhibiting higher levels of extraversion, the results of this study suggest graduates of all-female institutions ultimately share a greater investment, vigor, and positive attitude toward their careers.

While the findings of this study did not determine there to be a relationship between all-female education and CSE, results to a t-test showed that females educated in a single-gender environment exhibited higher mean scores in this category than the co-educated comparison group. Additionally, many quotes of respondents indicated that graduates attributed their all-

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female educational environment to higher levels of self-confidence and self-efficacy, and self-worth. For example:

“It helped build my self confidence and self worth. It gave me more focus when I needed it.”

“In general, I feel that attending an all-female high school gave me the self-confidence to be myself, feel comfortable in my own skin, and to go after any goals I have in life without feeling that I need to depend on anyone other than myself to achieve them.”

CSE encompasses the “fundamental premises that individuals hold about themselves and their functioning in the world” (Johnson, Rosen, & Levy, 2008, p. 391), and includes traits such as self-esteem, self-efficacy, locus of control, and emotional stability. Prior research has also indicated that all-female educated students had an internal locus of control and overall higher self-concept compared to co-educated students (Lee & Bryk, 1986). This could create opportunities for future research.

Theoretical Contributions

This study is one of the first to examine the long-term effects of an all-female educational environment on a former student’s career. Studies focused on graduates of all-female institutions are minimal which has left educators and researchers without answers as to the level of the impact, (if any), and all-female environment can have on a student’s future. This study further increases the understanding that an all-female education does have an impact on an individual’s career. Future studies could further benefit this area of research though examining and expanding the scope of this study’s findings.

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Limitations

Despite this study demonstrating a positive relationship between job engagement and all-female education, there are limitations to this study that can be analyzed through further research. The primary limitations to this survey relate to the sample of survey responses collected. A key limitation was the sample size and of survey respondents. The survey collected a total of 210 responses from all-female graduates and 99 responses from co-ed graduates. The disproportionate breakdown between the primary and comparison samples could have impacted the study results. Additionally, a majority of the all-female responses came from individuals who graduated from the same high school. This school is a parochial (Catholic) institution located in Rhode Island. The sample also featured little diversity as an overwhelming majority of respondents identified as white. An overall larger and more diverse sample size would allow for higher statistical power. The limited size and diversity of the sample collected could have impacted the outcomes of the regression model that was run in this study. Additionally, there could be a self-report bias for the job performance measure. While this study intended to capture a measure of one's job performance, participants could have responded with a self-perception of job performance rather than the actual outcome.

Implications and Future Research

The findings of this study are encouraging to the study of the all-female educational environment. Future studies could focus on a broader group of graduates of all-female institutions to further understand the long-term implications of this learning environment. Additionally, the role of CSE in all-female education can be further studied to understand if there is a potential relationship between those variables and career outcomes. This study

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analyzed individuals in aggregate without taking into account work industry. Future studies could also analyze if there are any long-term differences based on the industry all-female graduates are employed in. Particularly, studies could look closely to see how differences are manifested in industries where females are normally underrepresented. Certain industries could cater to a larger variation of all-female and co-educated individual's work outcomes.

CONCLUSION

This study hypothesized that an all-female education leads to higher levels of the work outcomes job performance, job satisfaction, and job engagement through the Big 5 personality traits conscientiousness, extraversion, and Core Self-Evaluation. The findings of this study demonstrated that there is an indirect relationship between all-female education and job engagement which is manifested through the Big 5 personality trait extraversion. While this study did not find a relationship between all-female education and job satisfaction and job performance future research can study these outcomes with a larger and more diverse sample. Future research could also explore the effects of CSE on all-female education. Overall, this research contributes to the current literature on all-female education and expands the current understanding to include the long-term implications of this learning environment.

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FIGURES & TABLES

Figure 1 – *Theoretical Model*

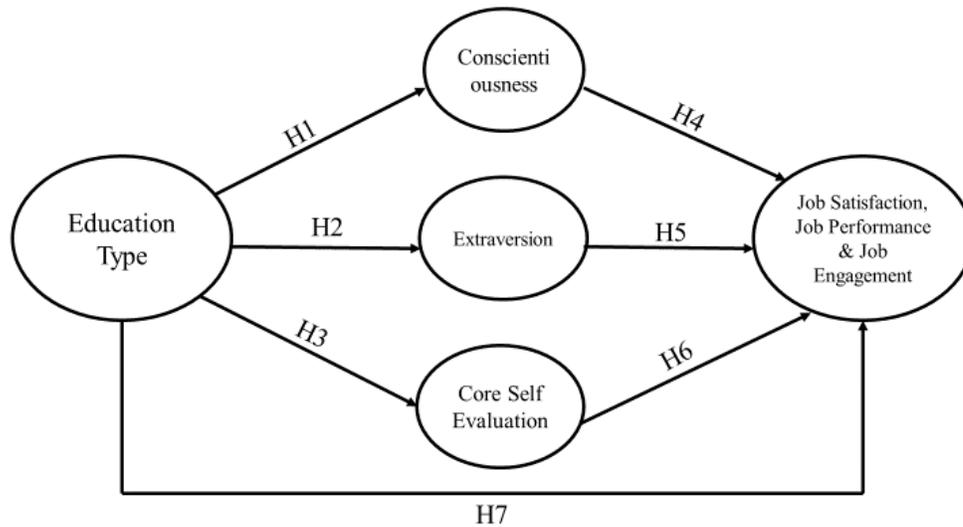


Table 1 – *Descriptive Statistics and Correlations*

Descriptive Statistics & Correlations

Variable	M	S.D.	1	2	3	4	5	6	7	8	9	10
1. All female education	1.32	0.47										
2. Conscientiousness	3.99	0.593	-0.03									
3. Core Self-Evaluation	3.80	0.50	0.08	0.32**								
4. Extraversion	3.78	0.67	0.23**	0.12*	0.38**							
5. Job Engagement	3.91	0.60	0.22**	0.15*	0.40**	0.38**						
6. Job Satisfaction	4.17	0.73	0.13*	0.12	0.39**	0.20**	0.68**					
7. Job Performance	4.20	0.76	0.12*	0.25**	0.24**	0.25**	0.24**	0.11				
8. Age	40.40	13.30	-0.05	-0.03	0.12*	-0.04	0.08	0.03	0.1			
9. Organization Tenure	7.81	8.36	-0.08	-0.12*	0.00	-0.15*	-0.07	-0.06	0.02	0.46**		
10. Socioeconomic Status (Continuous)	139905.11	107374.96	0.18**	0.00	0.08	0.16*	0.18	0.10	.15*	-0.16*	-0.10	

Note. N = 309 All-female coded as 2, Co-education coded as 1. **p < .01; *p < .05

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APPENDEX – SURVEY

Demographic Questions

1. What is your gender?
 1. male
 2. female

2. Did you attend an all-female educational institution?
 1. Yes
 2. No

3. What grade levels did you attend an all-female institution? (check box)
 1. Primary School
 2. Middle School
 3. High School
 4. College

4. For how many years did you attend an all-female institution?

5. If you are willing, please share how your all-female/coeducational environment influenced your life and work?

6. What is your age?

7. What is your ethnicity?
 1. White
 2. Black or African American
 3. Hispanic or Latino
 4. Asian
 5. American Indian, Native Alaskan, Native Hawaiian, or Pacific Islander
 6. Two or more ethnicities
 7. Other

8. What is the highest educational degree you have obtained?
 1. High School Diploma
 2. Some college
 3. Associates Degree
 4. Bachelor's Degree
 5. Master's Degree
 6. Doctorate or Professional Degree

9. Growing up, what was your typical yearly household income?
 1. Less than \$50,000

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2. \$50,000 - \$80,000
 3. \$80,000 - \$125,000
 4. \$125,000 - \$175,000
 5. \$175,000 - \$225,000
 6. \$225,000 - \$300,000
 7. Above \$300,000
 8. Prefer not to answer
10. *if answered “No” to question above. Select the option that best characterizes your secondary education.
1. Public school
 2. Charter school
 3. Private school with religious affiliation
 4. Private school without religious affiliation
 5. Does not apply
11. To what extent do you agree with the following statement: The environment you in which you were educated (all-female/coeducational) has had a positive impact on your education.
1. Strongly Disagree
 2. Somewhat Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree
12. To what extent do you agree with the following statement: The environment you in which you were educated (all-female/ coeducational) has had a positive impact on your long-term career.
1. Strongly Disagree
 2. Somewhat Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree
13. What is your current household income?
1. Less than \$50,000
 2. \$50,000 - \$80,000
 3. \$80,000 - \$125,000
 4. \$125,000 - \$175,000
 5. \$175,000 - \$225,000
 6. \$225,000 - \$300,000
 7. Above \$300,000

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8. Prefer not to answer

14. What is your current salary level?
 1. Less than \$50,000
 2. \$50,000 - \$80,000
 3. \$80,000 - \$125,000
 4. \$125,000 - \$175,000
 5. \$175,000 - \$225,000
 6. \$225,000 - \$300,000
 7. Above \$300,000
 8. Prefer not to answer

15. Which of the following best characterizes your current work situation?
 1. Unemployed (by choice)
 2. Unemployed (not by choice)
 3. Employed by an organization
 4. Self-employed

16. Which job industry were you employed in most recently?

17. How many years have you been employed in your current industry?

18. What is your current job title?

19. Do you hold a managerial role?
 1. Yes
 2. ?
 3. No

20. How many people do you supervise/manage?

21. How many years have you been at your current employer?

Personality & Job Variables

Job Satisfaction (Cammann et al., 1983)

1. Strongly disagree
 2. Disagree
 3. Neither agree nor disagree
 4. Agree
 5. Strongly agree
-
1. All in all, I am satisfied with my job.

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2. In general, I don't like my job. (R)
3. In general, I like working here.

Job Performance

When compared to my people at my company in similar positions, my performance is...

2. Much weaker
3. Slightly weaker
4. No change
5. Slightly Stronger
6. Much stronger

Have you received a raise in the past 12 months for your performance?

1. Yes
2. No

Job Engagement (UWES-9, Schaufeli, Bakker, & Salanova, 2006)

1. At my work, I feel bursting with energy.
2. At my job, I feel strong and vigorous.
3. I am enthusiastic about my job.
4. My job inspires me.
5. When I get up in the morning, I feel like going to work.
6. I feel happy when I am working intensely.
7. I am proud of the work that I do.
8. I am immersed in my work.
9. I get carried away when I am working.

Big 5 (NEO, positively worded items)

Please rate the extent to which you agree or disagree with each statement below on how you generally are, not necessarily right at this moment, but on average in your daily life. Indicate how you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age.

On average, I...

Neuroticism (Emotional Stability)

1. Often feel blue. (R)
2. Dislike myself. (R)
3. Am often down in the dumps. (R)
4. Have frequent mood swings. (R)
5. Panic easily. (R)

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Extraversion

1. Feel comfortable around people.
2. Make friends easily.
3. Am skilled in handling social situations.
4. Am the life of the party.
5. Know how to captivate people.

Openness to Experience

1. Believe in the importance of art.
2. Have a vivid imagination.
3. Tend to vote for liberal political candidates.
4. Carry the conversation to a higher level.
5. Enjoy hearing new ideas.

Agreeableness

1. Have a good word for everyone.
2. Believe that others have good intentions.
3. Respect others.
4. Accept people as they are.
5. Make people feel at ease.

Conscientiousness

1. Am always prepared.
2. Pay attention to details.
3. Get chores done right away.
4. Carry out my plans.
5. Make plans and stick to them.

Core-Self Evaluation (Judge, Erez, Bono, & Thoresen, 2003)

1. I am confident I get the success I deserve in life.
2. Sometimes I feel depressed (R).
3. When I try, I generally succeed.
4. Sometimes when I fail I feel worthless (R).
5. I complete tasks successfully.
6. Sometimes, I do not feel in control of my work (R).
7. Overall, I am satisfied with myself.
8. I am filled with doubts about my competence (R).
9. I determine what will happen in my life.
10. I do not feel in control of my success in my career (R).
11. I am capable of coping with most of my problems.

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12. There are times when things look pretty bleak and hopeless to me (R).