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Higher Education Perspectives: The Role Magic the Gathering Plays in Whole-Person, Academic, and Career Development

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by

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This Dissertation has been approved as partial fulfillment of the requirements for the degree of

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Dr. Rhonda Bishop, Dissertation Chair — 12-20-2016 — Date

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

Bob Ellsworth Lynch

Signature: Bob Ellsworth Lynch Date: 12–20–16

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Abstract

Games contribute to the whole-person, academic, and career development of college-aged individuals (Alderman, 2015). However, many higher-education institutions do not sponsor gaming as a collegiate extracurricular activity, thereby possibly eliminating the opportunity of an all-inclusive environment (Alderman, 2015). To elucidate the problem, Astin and Antonio's (2012) I-E-O model was engaged as conceptual framework for college-aged individuals' perception of Magic the Gathering's role in their whole-person, academic, and career development. The purpose of the study was to employ Magic the Gathering as the input; higher-education institutions as the environment; and whole-person, academic, and career development as the outcome. Descriptive survey data were gathered regarding college-aged individuals' perception of Magic the Gathering's role in whole-person, academic, and career development. Since this study is the first of its kind, a survey was an appropriate instrument for the research (Creswell, 2013). The sample to participate in the survey were college-aged individuals from North America and Europe who played Magic the Gathering. After an in-depth analysis by means of quantitative methods, descriptive statistics were used to determine college-aged individuals perceived Magic the Gathering plays somewhat of a role in their whole-person development. Furthermore, by analyzing the descriptive statistics, it was found that college-aged individuals perceived Magic the Gathering plays somewhat of a role in their academic development. Lastly, per the descriptive analysis taken through the survey, college-aged individuals perceived Magic the Gathering played very little of a role in their career development.

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Chapter One: Introduction

As of 2015, over 12 million registered Magic the Gathering players exist worldwide (Wizards of the Coast, 2016d). With so many participants involved in Magic the Gathering, it would be ideal for higher education institutions to consider such a large community as part of their culture because Magic the Gathering "encourages its players to develop various skills, including analytical thinking, empathy, social manipulation, iterative design, and communication" (Turkay, Adinolf, & Tirhali, 2012, p. 3). Otis (2012) suggested colleges and universities look to recruit students who involve themselves in extracurricular activities because being involved beyond coursework demonstrates passion. However, using non-traditional extracurricular activities for student retention seems lacking despite the "strong association between student involvement in extracurricular activities and improved attendance, behavior, and academic performance" (Reeves, 2008, p. 86).

Manlove (2013) pointed out a vast amount of time and resources have been devoted to extracurricular activities in education since the late 1980s. Manlove (2013) explained "Researchers have exposed benefits of participation in extracurricular athletic activities with multiple student outcome variables . . . The variables examined range from academic achievement to social development" (p. 7). Bishop et al. (2004) reported most parents of students would prefer their sons or daughters made average grades and participate in extracurricular activities than make advanced grades and not participate. Extracurricular activities increase overall satisfaction with the institution (Keller, 2011).

Magic the Gathering is a collectible card game created in 1993 by Richard Garfield, Ph.D. (Garfield, 2013). Magic the Gathering holds the world record as the

oldest and most played trading card game (Ashley, 2011). As of 2015, there are over 15,000 unique Magic the Gathering cards, and hundreds more are added each year (Wizards of the Coast, 2016d). Magic the Gathering is a game of cunning and intellect (Stoddard, 2014), and it requires players to strategize using partial information, which expands a variety of cognitive skills (Duke, 2014). However, despite the cognitive and social benefits of Magic the Gathering, Diaz (2013) recognized the game was once considered anti-social because of its ties with geek culture.

Robinson (2014) stated geek culture is "a sub-culture of dominant culture" (p. 1). Benokraitis (2016) defined sub-culture as a group of people who think, feel, and act somewhat differently than from those in the larger society. However, Tocci (2009) considered geek culture as countercultural because it knowingly rejects aspects of the dominant culture. As a result, the members of the geek sub-culture are generally characterized as socially awkward, so much so that the term geek has developed more of a specific meaning over time by combining particular interactional styles, visual signifiers, and professional or leisure interests together in order to create a recognizable stereotype (Woo, 2012).

In this chapter, the background of the study is presented by providing a historical perspective about Magic the Gathering and education. Further detail on how Astin and Antonio's (2012) I-E-O Model was employed as the theoretical base for Magic the Gathering's effect on the school environment is provided. The problem and purpose of the study are introduced. Key terms necessary to comprehend the study are defined and explained. The chapter is completed after a discussion of limitations and assumptions of the study.

Background of the Study

Despite the popularity of Magic the Gathering, and the use of games for education, the lack of research on Magic the Gathering's contribution to whole-person, academic, and career development is surprising, especially since engaging in games allows students the opportunity to partake in the richness of culture (Alderman, 2015). By acknowledging games play a vital role in societal norms, Alderman (2015) showed how Magic the Gathering can affect whole-person development. Mackay (2013) explained how "games help us develop non-cognitive skills. . . as fundamental as cognitive skills in explaining how we learn and if we succeed" (para. 8), thereby recognizing how Magic the Gathering can affect academic development. In fact, due to the challenging nature of games such as Magic the Gathering, many companies, such as Google and Microsoft, have "created games to increase worker morale, quality control, and productivity" (Schawbel, 2013, para. 11).

Many university professionals believe in "the intrinsic value in co-curricular engagement, which complements the students' academic studies, and enhances a more robust and satisfactory experience" (Elias & Drea, 2013, para. 4). Researchers in many countries are more interested in the learning that takes place out of school settings and focuses on various ages and disciplines, such as a college or university setting (Koutromanos & Avraamidou, 2014). According to Haber (2011), "Research demonstrates college students develop leadership through a number of different activities and experiences, the most significant being those that involve peer interaction, such as conversations or interaction with peers in classroom or co-curricular settings" (p. 65).

Elias and Drea (2013) pointed out "universities and colleges are no longer just places to receive a degree, but they are now also places of self-discovery and self-development" (para. 4). According to Wilson et al. (2014), "Academic engagement provides key emotional and behavioral pathways through which a student's feelings and motivations evolve into learning outcomes" (p. 627). Keller (2011) agreed extracurricular involvement, along with curricular involvement, would likely play a role in students' decision to persist in higher education. Elias and Drea (2013) argued in today's economy, many people have multiple careers, so higher education should focus more on whole-person development and less on career development. Elias and Drea (2013) also maintained the goal for many students is to graduate with a sense of purpose and understanding of their interests and skills, and not necessarily selecting a career.

Furthermore, Elias and Drea (2013) discovered "a wealth of literature that provides conceptual and empirical evidence that supports the benefits of student engagement in co-curricular activities. For decades now, researchers have found correlations between involvement and student satisfaction and retention" (para. 4). Keller (2011) also found, "Typical measures of social integration include extent of participation in extracurricular activities, peer friendships on campus, contact with faculty outside of class, and student perception of the quality of these experiences" (p. 53).

Gaming can be considered an area of student involvement (Koutromanos & Avraamidou, 2014). Gaming, specifically, supports student learning and engagement, offers unique and contemporary learning opportunities, offers hands-on learning components, promotes collaboration and interaction, and develops skills such as constructing arguments and debating (Koutromanos & Avraamidou, 2014).

Extracurricular activities such as debating which are related to academic subjects create additional environments for students to interact and identify with the institution (Keller, 2011).

Research has shown how engagement is linked to positive academic outcomes such as motivation, critical thinking, and high grades (Wilson et al., 2014). Wilson et al. (2014) also explained how "engagement improves skills and abilities and leads to greater psychological adjustment to particular environments" (p. 627). In fact, researchers have used a variety of frameworks, including Astin's theory of involvement, to examine student involvement (Elias & Drea, 2013).

Conceptual Framework

Astin and Antonio's (2012) Input-Environment-Outcome (I-E-O) model served as the base of this study to examine how much, if any, the collectible card game Magic the Gathering assisted in college-aged individuals' whole-person, academic, and career development. Astin and Antonio (2012) developed the I-E-O model to question the extent a program's outputs were a condition of the quality of the program's inputs. According to York, Gibson, and Rankin (2015), "Early explorations convinced Astin that accurate assessment required correctly parsing student inputs, the educational environment students experienced, and student outcomes" (p. 2). Keller (2011) further clarified Astin and Antonio's (2012) framework by showing how college outcomes are viewed as functions of three sets of elements: inputs, which include demographic characteristics, family backgrounds, and academic and social experiences; environment, which relates to the people, programs, policies, cultures, and experiences students

encounter while at college; and outcomes, that include characteristics, knowledge, skills, attitudes, values, beliefs, and behaviors students have after college.

Astin and Antonio's (2012) I-E-O model is a framework which emphasizes the necessity of having "an understanding of student qualities and characteristics upon their entry into an educational institution, the nature of the educational environments with which they come into contact, and their qualities and characteristics as they exit the institution" (University of Wisconsin-Milwaukee, 2016, para. 1). Astin and Antonio's (2012) theory of involvement demonstrated the importance of student time and energy in order to achieve intended learning and development. In this study, Astin and Antonio's (2012) I-E-O Model was used to determine how much, if any, college-aged individuals perceive Magic the Gathering to have influenced their whole-person, academic, and career development. The I-E-O Model carried an underlying theoretical basis in what Astin called "involvement theory" (Hodge, 1995, p. 10). According to Astin (1984), involvement theory "refers to the amount of physical and psycho-logical energy that the student devotes to the academic experience" (p. 518). For the purposes of this study, the Input was college-aged individuals who play Magic the Gathering; the Environment was higher education institutions; and the Outcome was whole-person, academic, and career development.

According to Astin and Antonio (2012), "Inputs refer to the characteristics of the student at the times of initial entry to the institution; environment refers to the various programs, policies, faculty, peers, and education experiences to which the student is exposed; and outcomes refers to the student's characteristics after the exposure to the environment" (p. 7). Therefore, Astin and Antonio's (2012) I-E-O Model was ideal for

this research because each element of the model assisted in answering the research questions that guided this study. Astin and Antonio (2012) rationalized, "Nothing in human experience is intrinsically an input, an output, or an environment. How we assign these labels depends entirely on what aspects of experience we choose to study and how we formulate the questions we wish to answer" (p. 22).

According to Hodge (1995), the focus of the research will determine the subject of each of the categories, so the main function of Astin and Antonio's (2012) model is the emphasis of the relationships which exist among the three variables. Heaney and Fisher (2011) clarified the framework by stating the changes which happen after students' time at college, outcomes, are affected both by personality and experiences prior to college, inputs, as well as the effect of peers, programs, faculty and other environmental factors, environment, during their time at college.

Astin and Antonio's (2012) model is often used by researchers due to the fact that many other "studies of learning communities and support programs for 'at-risk' students investigate only the broad impact of the program on participants' first-year success indicators such as GPA and first-year persistence" (Heaney & Fisher, 2011, p. 63). Geise and Knight (2011) contended the environment aspect of Astin and Antonio's (2012) I-E-O model is one of the most important factors experienced by students during their education. Geise and Knight (2011) further argued Astin and Antonio's (2012) framework regarding environment suggested "a higher level of predictive power comes from viewing individual socioeconomic measures such as parental education and family income as separate variables" (p. 23).

Hodge (1995) stated, “The theory of student involvement linked intended student outcomes to the program's ability to elicit sufficient student investment of effort and energy to achieve the desired result” (p. 11). Most institutional policies and practices affect the manner and amount of effort, time, and energy students spend in the institution (Astin & Antonio, 2012). Geise and Knight (2011) hypothesized faculty role models, positive student-faculty interactions, and peer interactions would affect the amount of time students spend in the institution. By viewing participants’ responses through Astin and Antonio’s (2012) I-E-O Model, a determination of how much, if any, the participants perceived Magic the Gathering to affect whole-person, academic, and career development was achieved.

Statement of the Problem

According to the Achieving the Dream (2016) foundation, nearly two-thirds of the students who enroll in college test below the required scores for Math and English. In fact, 50% of students tested for college readiness were documented to be two or more levels below college standards in at least one subject area (Achieving the Dream, 2016). Luczyk (2012) stated the need for education is out-pacing the current achievement of many individual Americans. Shulock and Jenkins (2011) explained: “Amid growing signs of America’s weakening position in the global economy, federal and state policymakers and major foundations have set ambitious goals for increasing postsecondary attainment in the United States” (p. 3). Jenkins (2011) suggested deep engagement of faculty and staff with students is a prerequisite of the necessary change in institutional policies and practices to improve higher education retention and graduation.

Most national college-completion initiatives focus on "improving institutional outcomes through programmatic activity and creating a culture of student success" (Russell, 2011, p. 3). Russell (2011) explained college-completion initiatives encourage colleges and universities to sponsor extracurricular activities. Bucknavage and Worrel (2005) uncovered the benefits of participating in extracurricular activities with multiple student outcome variables, which include personal and social development, academic achievement, self-concept, focus of control, delinquency, and problem behaviors.

Administrators in higher education institutions not only need to focus on instructing students, but they also need to actively reach out to them (Elzen & Roush, 2013). There are many students who do not fit under the umbrella of athletic extracurricular activities projected by many schools (Branch, 2011). As a result, many overlooked students do not feel a connection to their alma mater (Branch, 2011). Regier (2014) suggested if non-traditional clubs or extracurricular activities, such as a Magic the Gathering club, were introduced, higher education institutions could better create an all-inclusive environment.

However, at the time of this research, a search of Magic the Gathering's inclusion in published extracurricular sponsorship was not prevalent. In this study, the viability of Magic the Gathering as an extra-curricular activity in colleges and universities was studied by analyzing perceptions of college-aged individuals who play Magic the Gathering. By using Astin and Antonio's (2012) model, students develop and learn more when they are involved in both the social and academic facets of college. Elzen and Roush (2013) confirmed through their study students who were involved in a campus's gaming club developed a sense of belonging to the institution. As a result, Elzen and

Roush (2013) have noticed an increase in both student retention and visibility of the students on the campus.

Purpose of the Study

The purpose of this research was to gather quantitative information regarding college-aged individuals' perception of the role Magic the Gathering has played in their whole-person, academic, and career development. According to Tinto (1987b), successful student involvement is dependent upon social involvement, in and out of the classroom. In regards to student organizations, "students become more involved with the institution rather than just a visitor who comes to take classes. [Student involvement in the institution] is the most important part: students become part of the functioning of the institution and feel more identified with it" (Beltramini, 2012, para. 2). Tinto (1998) believed students should be involved in extracurricular activities, clubs, and organizations throughout the educational journey.

Tinto (1998) emphasized how a community benefits when students are involved in extracurricular activities throughout their educational journey. Tinto (1998) further explained social isolation is a forecaster for student attrition. Scrivener and Coghlan (2011) validated Tinto's claims by arguing students with greater academic achievements are more likely to persist and succeed in completion of educational credentials than those who obtain lower academic achievement. Furthermore, Astin and Antonio (2012) and Tinto (1998) both stressed the importance of building a relationship between the student and his/her institution of higher learning for academic success and retention. A quantitative portrayal of the perceived contribution Magic the Gathering played in whole-person, academic, and career development was provided in this study.

Higher education institutions could use the results in this research as a guide on how to accommodate non-traditional activities to create an all-inclusive environment. Sociologists could also use this study to focus on groups of college-aged individuals who are considered geeks and "represent the bottom of the status hierarchy" (Bishop et al., 2004, p. 3). Secondary educators could use the information gathered in this study to assist in creating non-traditional clubs and organizations to allow for an all-inclusive environment.

Research questions. The following research questions guided the study:

1. What role, if any, does Magic the Gathering play in whole-person development of college-aged individuals?
2. What role, if any, does Magic the Gathering play in academic development of college-aged individuals?
3. What role, if any, does Magic the Gathering play in career development of college-aged individuals?

Definition of Key Terms

For the purposes of this study, the following terms are defined:

Academic development. The development of "the skills, strategies, and behaviors [in students] needed to perform as confident, independent, and active learners" (Carnegie Mellon University, 2016, para. 1).

Career development. The constant improvement of skills and knowledge, which includes professional growth (Berkeley University of California, 2016).

College-aged individual. Any person age 18 or older who is capable of currently attending a college or university at any level, undergraduate or graduate, or any person

who has obtained a college degree within the last 12 months is considered a college-aged individual (Henking, 2013).

Environment. Astin and Antonio (2012) described the environment as students' physical and psychological experiences take place during the educational program. According to Astin and Antonio (2012), the environment incorporates everything that happens to students during the course of their educational program that might conceivably influence the outcomes.

Extracurricular activities/engagement. According to Shulruf (2010), any engagement outside of school that promotes learning and education and is sponsored by the school, or any school club membership, including athletics, is considered an extracurricular activity.

Geek/Nerd culture. A society in which its citizens are knowledgeable and enthusiastic about specific subjects (Tocci, 2009). For this study, the terms geek and nerd are used interchangeably.

Input. Astin and Antonio (2012) described input as the amount of time and energy, physical or psychological, students dedicate to the academic experience.

Magic the Gathering. According to Wizards of the Coast (2016d), Magic the Gathering, the first trading card game, was created by Richard Garfield and published by Wizards of the Coast in 1993. Magic the Gathering continues to thrive with approximately 12 million players as of 2015 (Wizards of the Coast, 2016d). Players win by reducing their opponents' life from twenty points to zero points or to reduce the number of cards in their opponents' decks to zero by summoning creature cards or casting spells to disrupt their opponents' game plans (Cowling, Ward, & Powley, 2012).

Outcome. The desired aims and objectives of a program (Astin & Antonio, 2012).

Whole-person development. The progressive process "through which the intellectual, physical, professional, psychological, social and spiritual capacities of an individual can be holistically enhanced. Capacity refers to attitude, performance, and potential" (Hong Kong Baptist University, 2016, para. 1).

Limitations and Assumptions

The following limitations were identified in this study:

Sample demographics. Study participants were college-aged individuals from different European and North American countries. Since the sample for this study was purposively chosen, random sampling was not involved. However, non-random samples have certain limitations (Scheaffer, Mendenhall, Ott, & Gerow, 2012). Fraenkel, Wallen, and Hyun (2014) explained due to sampling error, no two samples will have all the same characteristics, which suggests the results of the study may differ if the study were duplicated.

Instrument. The instrument for this study was a survey developed by the researcher. The survey was a limitation due to wording and phrasing considerations, which could have varying effects on study participants (Seltman, 2015). Since surveys rely on self-reporting information, they can also be a source of unreliable data (Stock, Wright, & Yogo, 2012).

The collection of unreliable data on survey instruments is usually due to participants who do not understand certain questions, participants who have poor or false memories, or participants who intentionally lie on the survey (Stock et al., 2012). The

length of this survey may have also posed a limitation because researchers have shown increased questionnaire length has a negative impact on data quality (Blair, Czaja, & Blair, 2014). Due to the length of this survey, some of the participants may have not been able to respond fully because of time restrictions, so some participants may have selected random answers toward the end of the survey (Barge & Gehlbach, 2011).

The last limitation was the potential bias of the researcher because the researcher fell within the target population of the study and was an individual who played Magic the Gathering. The researcher did not participate in this study to circumvent this potential bias (Fraenkel et al., 2014). Every effort was made to ensure the wording and phrasing of the survey questions would not influence the free response of the study participants (Fraenkel et al., 2014).

The following assumptions were accepted:

1. The responses of the participants were offered honestly and without bias.
2. The responses reasonably represented the data the researcher attempted to collect.

Summary

In this chapter, the background of the study was presented by providing a historical perspective about Magic the Gathering's involvement, or lack thereof, in higher education. Astin and Antonio's (2012) I-E-O model was employed as the conceptual framework for Magic the Gathering's effect on college-aged individuals' perspective on whole-person, academic, and career development. The problem, which was presented as many colleges and universities still do not include Magic the Gathering when sponsoring extra-curricular activities thereby underestimating an opportunity which could help create

an all-inclusive environment, was then discussed. Afterward, the purpose of this study and its effect on higher education was explained. The questions which guided the research were then presented. Key terms necessary to the study were then defined and explained. The chapter was completed with a discussion of the limitations and assumptions of the study.

In Chapter Two, an in-depth explanation of Astin and Antonio's (2012) I-E-O model is provided. The historical evolution of extracurricular activities and the impact extracurricular activities have in higher education classrooms are explained. Afterwards, the history of Magic the Gathering and its effect on whole-person development and career development are given focus. Afterward, geek culture and its influence on society and education are discussed. At the end of the chapter, the application of the I-E-O model is fully explained.

Chapter Two: Review of Literature

Higher education institutions use extracurricular activities as structured environments where adolescents can express their identity in a controlled setting (Darling, Caldwell, & Smith, 2005). Shaevitz (2013) claimed "extracurricular activities are the major way students can demonstrate how unique they are, possibly more interesting, even 'better' than other student applicants, and showcase what they love to do" (para. 3). Shaevitz (2013) revealed another benefit of incorporating extracurricular activities in education was by having the extracurricular activity available at the location where learning takes place. Since most educational research takes place in an academic setting, such as educational institutions, extracurricular activities which took place in the academic setting could also be researched (Astin & Sax, 1998). Astin and Sax (1998) claimed the "I-E-O model was designed to address the basic methodological problem with all non-experimental studies in social sciences, namely random assignment of people (inputs) to programs (environments)" (p. 252).

In Chapter Two of this study, an overview of Astin and Antonio's (2012) I-E-O model is presented. An explanation of how the model has been used in similar studies is also given. A history of extracurricular activities, the impact extracurricular activities have on students' educational experience, as well as the benefits of extracurricular activities are investigated. Afterwards, a history of Magic the Gathering, the affect Magic the Gathering has on society, and a brief understanding of how to play Magic the Gathering are explained. Finally, a history of geek culture and an explanation of geek culture are given and how societal culture has changed to include geek culture as an accepted sub-group are reviewed.

Conceptual Framework

Educational assessments may offer some understanding of the cause and effect relationships between pedagogy and outcomes of education (Thurmond & Popkess-Vawter, 2003). For educational establishments to accurately assess students' learning experience, institutions must minimize causal-inference error (Astin & Antonio, 2012). The I-E-O model effectively assists in minimizing this error by controlling the characteristics of students at the beginning of their learning experiences (Thurmond & Popkess-Vawter, 2003). According to Manley Lima (2014) "Researchers have used [I-E-O] model to examine how environmental experiences that are under the control of institutions influence various educational outcomes" (p. 8). Mok (2013) agreed "By studying the relationships among the three components, the I-E-O design allows researchers to adjust for input differences when examining environment factors on the outcomes" (p. 63).

The early studies of the I-E-O model found colleges and universities focused solely on the output of an institution or program (Astin & Antonio, 2012). Generally, colleges and universities would measure the output of the program in terms of how many students graduated, how many graduates earned advanced degrees, or how much money their graduates earned (Astin & Antonio, 2012). According to Mok (2013), many "outcome variables are measured through a survey administered during senior year" (p. 64).

However, inputs also "indirectly shape outcomes through ways in which students engage with the institutional environment" (Manley Lima, 2014, p. 49). Mok (2013) described input characteristics as either fixed characteristics, such as gender, or invariant

characteristics, such as ambition. Therefore, even though outputs do not tell colleges or universities what educational impact their institutions had on their graduates (Astin & Antonio, 2012), measuring inputs may show an impact on environmental experiences and educational outcomes (Manley Lima, 2014).

Previous studies of educational assessment were incomplete because they only included data on student inputs and student outcomes, and for the educational assessment project to be complete, it must include input, environment, and outcome (Astin & Antonio, 2012). According to Astin and Antonio (2012), "Environmental information is especially critical here, since the environment includes those things that the educator directly controls in order to develop the student's talents" (p. 19). Mok (2013) further argued the characteristics of institutions allow researchers to compare various institutions among each other. Having the environment factor is important for educational assessment because it allows educators "to measure relevant input characteristics of each student and then correct or adjust for the effects of these input differences in order to get a less biased estimate of the comparative effects of different environments on outputs" (Astin & Antonio, 2012, p. 21).

According to Thurmond and Popkess-Vawter (2003), "Many studies conducted in education lacked the necessary rigor to make strong causal inferences regarding the learning environment" (para. 6). However, the lack of consideration regarding student involvement in extracurricular activities before participating in educational courses is problematic because without controlling for student characteristics or previous participation in academic or extracurricular activities, accurate assessment can be limited (Thurmond & Popkess-Vawter, 2003). Through the I-E-O method, Astin and Antonio

(2012) found active involvement in academic activities, co-curricular activities and interactions with lecturers, friends and other staffs influenced students' learning and development positively because the I-E-O model helped in providing statistical control for input characteristics.

There are two reasons to include input data assessment when using applications of the I-E-O model: first, "inputs are always related to outcomes" (Astin & Antonio, 2012, p. 69); and second, "inputs are almost always related as well to environments" (Astin & Antonio, 2012, p. 69). Astin and Antonio (2012) argued, "Because inputs are related to both outcomes and environments, any observed relationship between environments and outcomes might well reflect the effects of inputs rather than the actual effects of environments on outcomes" (p. 69).

Using students who are involved in extracurricular activities is not new to the input category of Astin and Antonio's (2012) model (Thurmond & Popkess-Vawter, 2003). For example, Manlove (2013) used Hispanic female students as the input regarding what impact extracurricular athletic activities had on academic achievement. Manley Lima (2014) found "A student's place of residence, participation in athletics, membership in student government, academic involvement, type of employment, and interaction with faculty and peers were correlated with students' level of involvement" (p. 34).

According to Astin and Antonio (2012), "Environmental assessment presents by far the most difficult and complex challenge in the field of assessment" (p. 87). The reason the environment aspect of the assessment is difficult is because it "encompasses everything that happens to a student during the course of an educational program that

might conceivably influence the outcomes under consideration" (Astin & Antonio, 2012, p. 87). Mok (2012) concurred "The level of optimal interaction is likely to depend on various host factors, such as campus setting or culture, as well as the local or conational/cultural local community available" (p. 31).

Therefore, for a student who is enrolled and actively attending a college or university, the environment could include "courses taken, the personalities and pedagogical techniques of the professors who teach these courses, the physical surroundings in the classroom and on other parts of the campus, the behavior of roommates and friends, the organizations and other co-curricular activities" (Astin & Antonio, 2012, p. 87). Astin and Antonio (2012) argued the "task of assessing the college environment, then, involves the identification and quantification of these external circumstances and events" (p. 87), which makes assessing the environment aspect the most challenging of the I-E-O model.

Higher education institutions have been used previously in regards to Astin and Antonio's (2012) model. Keller (2011) used a community college as the environment when researching the success in developmental mathematics. Within Keller's (2011) research, he found "in-college experiences, particularly interaction with the college social and academic environments, are critical components to understanding what effect college has on students" (p. 8). Mok agreed, "Student-faculty interaction impacts student success, which in turns impact academic outcome. However, since both student success and academic outcome are both student outcome variables. The potential intermediate effects need to be further examined in future research studies" (p. 104).

Of the three aspects of assessment variables, “outcomes are generally the most critical and important to educators and researchers” (Astin & Antonio, 2012, p. 41). According to Astin and Antonio (2012), outcome measurements are value based because “they reflect the desired aims and objectives of the educational program” (p. 41). Therefore, the “task in developing an appropriate outcome measure is thus operationalized the conceptual outcome in some way” (Astin & Antonio, 2012, p. 41), such as by creating a test of competence in critical thinking (Astin & Antonio, 2012).

Higher education institutions such as Oral Roberts University (2016) claimed to have founded their basis of education around whole-person development as a holistic approach grounded in faith, and they even offer scholarships based on whole-person development. Bennett (2012) agreed whole-person development is integral to the development of leadership capacity as supported by the literature that increasingly recognizes the importance of whole-person, or holistic, teaching and learning as being fundamental to the ways adults learn.

Furthermore, colleges and universities primary goals are to retain students and help them achieve academic success (Astin & Antonio, 2012). Career development is the final outcome investigated regarding the I-E-O model (Astin & Antonio, 2012). Patton and McMahon (2014) argued, “these outcomes can all be predicted from knowledge of personality types and environmental models” (p. 41) such as Astin and Antonio’s (2012) I-E-O model.

Extracurricular Activities

The National Federation of State High School Associations (NFSHSA, 2011) claimed extracurricular activities provide lessons, such as team work, for practical

situations. The NFSHSA (2011) further claimed students develop skills to handle competitive situations through participation in extracurricular activities. According to Peguero (2011), "There are connections between school-based extracurricular activity involvement and students' educational progress and life course" (p. 20). Howard (2011) also claimed young adults learn crucial skills from extracurricular activities that they carry with them throughout their lives.

English (2006) found in the early twentieth century, scientific management dominated the American education system using Taylor's bottom-line techniques, which argued output was increased by improving student methodology. Therefore, the individual student was of little concern as long as the productivity of the organization increased (English, 2006). Thus many academics thought of extracurricular activities as "distractions to academic purposes" (English, 2006, p. 373).

However, World War I affected how schools viewed extracurricular activities (Urban & Wagoner, 2013). Schools started developing extracurricular activities such as football and baseball to educate male students on how to work in a team environment to prepare them for military life (Urban & Wagoner, 2013). After the war, other extracurricular activities were introduced that benefited both males and females, such as drama, music, and assemblies (Urban & Wagoner, 2013).

It was not until the latter part of the twentieth century when extracurricular activities become a dominant part of the American education system (English, 2006). A survey by the United States Census Bureau (2014) had shown "fifty-seven percent of children between 6 and 17 years old participate in at least one after-school extracurricular activity" (para. 1). While the majority of students, 35%, participate in sports, the other

65% is split evenly between other school-sponsored clubs and activities (United States Census Bureau, 2014).

There have been multiple studies orchestrated regarding the correlation between extracurricular activities and academic performance (Darling et al., 2005). According to Broh (2002), participation in extracurricular activities is associated with improved grade point averages, higher educational aspirations, increased college attendance, and reduced absenteeism. Elias and Drea (2013) found positive associations between extracurricular participation and academic achievement. Although researchers agree extracurricular activities do influence academic performance, the specific effect which various activities produce is debated (Darling et al., 2005). For example, Broh (2002) claimed a study conducted by the National Educational Longitudinal Study found "participation in some activities improves achievement, while participation in others diminishes achievement" (para. 1).

Marsh and Kleitman (2002) suggested "Many extracurricular activities have proven to be beneficial in building and strengthening academic achievement, even if the activities are not obviously related to academic subjects" (para. 9). Marsh and Kleitman (2002) further claimed "A number of studies revealed that students participating in extracurricular activities did better academically than students who did not participate" (para. 7). Researchers have paid particular attention to the correlation between extracurricular activities and academic performance in adolescents (Darling et al., 2005).

Participation in activities across the nation has been on a steady climb for decades (NFSHSA, 2011). The NFSHSA (2011) reported a 3.5 million increase among athletes in the United States over the past 40 years of extracurricular participation in high schools.

According to Monaghan (2012), over 7.6 million students participate in activities each year out of the 19,000 high schools across the nation.

Fredricks (2012) stated, “There is an increasing awareness that participation in organized activity context offers valuable opportunities for growth and positive youth development” (p. 295). In a study by Darling et al. (2005), students were given a survey containing twenty extracurricular activities. Darling et al. (2005) found in their study “adolescents who participated in extracurricular activities reported higher grades, more positive attitudes toward school, and higher academic aspirations” (para. 1).

Darling et al. (2005) also asked students participating in the study to mark which activities they participated in that year. The students were also asked about their grade point averages (Darling et al., 2005). The results of the survey indicated the students who participated in extracurricular activities had higher grades, higher academic aspirations, and better academic attitudes than those not involved in extracurricular activities (Darling et al., 2005). The NFSHSA (2011) confirmed students who regularly participated in extracurricular activities tended to have higher grade point averages, better attendance records, lower dropout rates, and fewer discipline problems than their counterparts who did not participate in extracurricular activities.

Bloomfield and Barber (2011) contended positive outcomes have been associated with students’ participation in extracurricular activities. Furthermore, extracurricular activities share several features with positive academic development, including daily structure and schedules, support and guidance by adult leaders, and fraternization with academically-oriented peer groups (Fredricks, 2012). Extracurricular activities also give students opportunities to hone skills and participate in significant tasks (Fredricks, 2012).

Martin (2015) claimed extracurricular activities provide life lessons which prepare students to have a positive impact on the world. Roulin and Bangerter (2013) explained students are involved in extracurricular activities because they are passionate or interested in the extracurricular activities. Roulin and Bangerter (2013) further noted involvement in extracurricular activities helps build students' resumes and most students see extracurricular activities as valuable applications to future careers.

Another benefit to extracurricular activities is students are able to form relationships with other students and with adult role models due to their participation in a common interest (Darling et al., 2005). Moreover, the NFSHSA (2011) argued the variety of skills and connections with peers and adult leaders gained from extracurricular activities is a predicator of success in college and future careers. Darling et al. (2005) agreed, "Extracurricular activities allow youth to form new connections with peers and acquire social capital. They are one of the few contexts, outside of the classroom, where adolescents regularly come in contact with adults to whom they are not related" (p. 1).

However, extracurricular curricular activities in schools are on the decline (Lucas, 2012). Harrison (2013) explained "Activity programs in general, and athletics in particular, become targets for large-scale spending cuts" (p. 28). According to the United States Census Bureau (2014), in 2014, nearly 57% of children participated in extracurricular activities. This amount is a drop since 2010 when more than 7.6 million students participated in sports (Howard, 2011).

School districts are having to make tough decisions about where their money should be spent, and extracurricular activities are one cut many school districts consider to save money (Lucas, 2012). Kronholz (2012) explained school districts are required to

make budget cuts because voters are not willing to pay taxes. Martin (2015) contended, "Despite the economic challenges facing the nation and schools, maintaining extracurricular programs is vital" (p. 7). Harrison (2013) reasoned extracurricular activities must not be cut from schools because they require a small percentage of most schools' overall budget. Harrison (2013) also argued that due to the large amount of students who participated in extracurricular activities, the extracurricular activities should not be removed from schools.

Students who participate in extracurricular activities have better grades, lower discipline infractions, higher graduation rates, and better attendance (Harrison, 2013). The NFSHSA (2011) also argued students learn how to develop skills to deal with competitive situations and build self-confidence and self-discipline. The skills students are taught through extracurricular activities are societal expectations to produce productive members of society (Martin, 2015). Harrison (2013) explained that despite the extracurricular activity chosen, whether it is sports, leadership or art, if students are successful, then they have set goals which have directed their efforts.

Magic the Gathering

Magic the Gathering was created in 1991 by Richard Garfield, a doctoral candidate in combinatorial mathematics (Wizards of the Coast, 2016d). Magic the Gathering made its public debut in 1993 in Dallas, Texas (Wizards of the Coast, 2016d). The world market for Magic the Gathering has become a multi-billion-dollar enterprise (Turkay et al., 2012).

Garfield considered Magic the Gathering to be a "networked game" (Butler, 2014, para. 13), which allowed players to play one game after another in quick succession with

different people (Butler, 2014). According to Butler (2014), Garfield's main focus on the creation of Magic the Gathering was inspired by the mechanics of game construction. Garfield was "interested in designing a game in which people could construct their own decks" (Butler, 2014, para. 5) so every game would be different.

Cowling et al. (2012) argued, "card games typically have a wealth of hidden information and provide an interesting challenge" (p. 1). In terms of game creation, Garfield claimed he was inspired by systems including evolution, economics, or warfare (Butler, 2014). Garfield explained the mechanics of how evolution, economic, and warfare systems work in real life gave rise to the similar gaming elements (Butler, 2014).

Magic the Gathering shifted in many unexpected ways during the beginning years of the game (Butler, 2014). Since its introduction, there have been over 12,000 different cards, each with thousands of copies, printed in 11 different languages (Wizards of the Coast, 2016d). From the beginning, Magic the Gathering has gained in popularity to have over 12 million registered players worldwide (Wizards of the Coast, 2016d) making it Hasbro's, the game's manufacturer, biggest selling game (Cowling et al., 2012). Garfield argued part of Magic the Gathering's success is due to how the different levels of complexity of the game satisfies the various types of players who clamored for sponsored tournaments (Butler, 2014). Due to Magic the Gathering's popularity, professional tours have been created to encourage more passionate play (Cowling et al., 2012).

Magic the Gathering is a strategic card game for two or more players (Wizards of the Coast, 2016a). Like many other card games, Magic the Gathering is characterized by playing with hidden information, such as unknown cards' in opponents' hands and

drawing cards from a shuffled deck (Cowling et al., 2012). Magic the Gathering differs from other card games because it requires players to use cards specifically created for the game (Cowling et al., 2012).

According to Cowling et al. (2012), many cards change the rules of the game in subtle ways, and the interaction between the rules change how the game is played, which gives rise to higher quality game play. Magic the Gathering can change the dynamic of players' social interaction by manipulating how players used their cards during deck construction and game play (Butler, 2014). The game has a high focus on player interaction because players must make inferences on what cards their opponents could be holding and what cards could be in opponents' decks (Cowling et al., 2012).

Magic the Gathering is different from other games for many reasons. Being the foremost collectible card game, it was also the first of its kind (Wizards of the Coast, 2016d). Magic the Gathering does not use a standard deck of cards; instead, it uses cards that are designed and printed for the game (Cowling et al., 2012). However, since there are over 12,000 cards in print (Wizards of the Coast, 2016d), players have almost limitless card combinations to use to construct decks (Cowling et al., 2012). The wide variety of deck construction available makes it almost impossible to play every combination of cards which are readily accessible (Butler, 2014). The complexity in deck construction and play makes Magic the Gathering an exercise in intelligent game play (Cowling et al., 2012).

Another significant difference in Magic the Gathering is players are not limited to playing one card per turn (Wizards of the Coast, 2016a). Each card has a cost to be paid for a player to play it, so as the game progresses, the resources to play cards increase to

give the player more options (Wizards of the Coast, 2016a). Players may play as many cards from their hands during their turns as they choose as long as they can pay the costs associated with each card (Wizards of the Coast, 2016a). Furthermore, the sequence of play is not linear because opponents can play cards during other players' turns to cancel the effects of other cards (Cowling et al., 2012). Much of Magic the Gathering's appeal stems from understanding and exploiting the interaction between opponents and their cards (Cowling et al., 2012). Therefore, Magic the Gathering "is less rigid than most turn-based games as each player may have decision points during the opponent's turn" (Cowling et al., 2012, p. 2).

Magic the Gathering is not only a physical card game, but an online game as well (Butler, 2014). In 2002, Magic the Gathering Online was released so players who did not have access to game stores or did not have a sufficient number of opponents could still participate in the game (Wizards of the Coast, 2016d). In 2009, Magic the Gathering was introduced to video game systems such as Xbox and PlayStation (Cowling et al., 2012). Players can buy or download Magic the Gathering games onto their gaming systems to play against a computer opponent (Cowling et al., 2012). However, the computer opponent does not bring the challenge or the social interaction brought by another human player (Cowling et al., 2012).

More than social interaction, Magic the Gathering has other benefits (Turkay et al., 2012). Playing collectible card games as a whole "encourages its players to develop various skills, including analytical thinking, empathy, social manipulation, iterative design, and communication" (Turkay et al., 2012, p. 3). Garfield explained one of the educational benefits about the game is after cards were designed, players could

manipulate the how the cards were used beyond what the designer anticipated (Butler, 2014). Other benefits of playing Magic the Gathering include negotiation and persuasion, cooperation, and creative socialization (Turkay et al., 2012).

To play Magic the Gathering, players take on the role of "Planeswalkers, powerful [wizards] each armed with a deck of Magic the Gathering cards representing lands, creatures and spells" (Wizards of the Coast, 2016b, para. 1). Cowling et al. (2012) stated "the interaction between the available cards can become extremely complex" (p. 3). The objective of the game is for players to use the lands, creatures, and spells to reduce their opponents' life from 20 to zero (Cowling et al., 2012). According to Cowling et al. (2012), "Each player's hand of cards represents the spells and resources that the wizard has available and the players play cards from their hand in order to either generate resources or play spells with which to beat their opponent" (p. 3).

The land cards in each deck are the source of a player's mana, the resource that fuels all the spells in the game (Wizards of the Coast, 2016b). Cowling et al. (2012) explained players will accumulate land cards in play over the course of the game that players can use to "expend resources equal to the total amount of land they have in play in order to meet the costs of creature cards from their hand" (p. 3). The land cards allow players to play creature and spell cards from their hands (Wizards of the Coast, 2016b). A player's resources refresh at the beginning of each of his or her turns, which is how the player can amass large amounts of mana to play larger spells and creatures (Cowling et al., 2012).

Creature cards represent the variety of beings that players may encounter during play (Wizards of the Coast, 2016b). Cowling et al. (2012) denoted, "Each creature card

has power and toughness values denoting how good the creature is at dealing and taking damage, respectively, and a resource (or mana) cost" (p. 3). According to Wizards of the Coast (2016b), "creatures range in size, speed, and power" (para. 3). Creatures attack opponents and defend players at the command of the players (Wizards of the Coast, 2016b).

A creature taps, turns sideways, when it attacks to show it is no longer available for blocking (Wizards of the Coast, 2016a). After a player declares which creatures are attacking, the players' opponents may defend themselves by blocking with untapped creatures (Wizards of the Coast, 2016a). Each attacking creature can have any amount of creatures blocking it; however, each blocking creature can only block one attacking creature (Cowling et al., 2012).

A creature is removed from play if damage dealt to it equals or exceeds its toughness, maximum damage allowance (Cowling et al., 2012). Any creatures that were not blocked deal damage to the defending players (Wizards of the Coast, 2016a). When players take damage from creatures, the players subtract the creatures power, the maximum amount of damage the creature can do, from the players' life total (Wizards of the Coast, 2016a). Players lose the game if their life total is zero or less (Cowling et al., 2012).

The rest of a player's deck is made up of spell cards (Wizards of the Coast, 2016a). Wizards of the Coast (2016b) explained spells do "a myriad of things, from blocking incoming attacks, to healing damage, to killing your opponent's creatures, and much more" (para. 4). To play spells, players must announce the target of the spells after they pay any costs associated with the spell (Wizards of the Coast, 2016a). If the

opposing players do not have a response to the spell, the spell resolves and the action explained in the spell occurs (Wizards of the Coast, 2016a).

As the input aspect of Astin and Antonio's (2012) I-E-O Model, Magic the Gathering as an extracurricular activity fills the social void necessary for students to feel connected to their higher education institution, which, in turn, increases retention (Tinto, 2009). Since many Magic the Gathering players who are college students play at their colleges and universities, the higher education institutions are already serving as the qualified environment for the I-E-O model (Astin & Antonio, 2012). When Magic the Gathering was viewed through the lens as an extracurricular activity, all aspects of Tinto's (2009) social integration theory were present.

Geek/Nerd Culture

Geek culture and the definition of geek have greatly evolved from the early twentieth century (Williams, 2013). According to Tocci (2009), the original English definition of geek was someone who performed morbid or disgusting acts in carnivals. The term nerd, on the other hand, was originally published as a fantastical creature in the Dr. Seuss novel, *If I Ran to the Zoo* (Lapacek-Trout, 2014). Eventually, both terms, geek and nerd, were used to define someone who was not cool (Lapacek-Trout, 2014).

By the 1950s, the term geek referred to unsociable people who were inexplicably devoted to a hobby (Tocci, 2009). In the 1980s, the description of geek narrowed to specify people were capable at coding and understanding computers and electronics (Oswalt, 2010). Tocci (2009) stated the term has digressed to mean what it did in the 1950s because the term geek currently describes people who are heavily invested in their

interests or hobbies; however, the difference between today's geek and 1950s geek is it is currently chic to be geek (Williams, 2013).

One such example of the past representation of how nerds and geeks are displayed is through television shows like *Saved by the Bell* and *Family Matters* where characters like Screech and Urkel give a negative portrayal of geek and nerd (Lapacek-Trout, 2014). From the 1950s to the 2000s, nerds and geeks were identified as social outcasts in films and television (Busse, 2013). Movies such as *Revenge of the Nerds* and *Napoleon Dynamite* and television shows such as *Freaks and Geeks* and *The IT Crowd* portrayed the nerd and geek subculture as socially awkward and unfit for popular culture (DeLea, 2012).

A study by Ward (2014) found many students who were labeled as geeks in school transitioned into more technology accepted roles like computer service or information technology repair. However, while geeks are considered glamorous in terms of technology, Kendall (2011) explained the opposite is true in terms of pop culture, namely television and movies. According to Kendall (2011), many film directors and Hollywood producers have found it difficult "to make computer security or repair seem particularly interesting or valiant" (p. 507).

Rentzsch, Schutz, and Schroder-Aber (2011) agreed people who are labeled nerds could overcome the stereotype if those people socialized more with their peers. On the other hand, Kendall (2011) described geeks as having little to no social skills, but social skills are not a necessary trait in the technology business. Rentzsch et al. (2011) concurred being labeled nerd in school often led to being an outcast in the workforce.

Rentzsch et al. (2011) claimed serious consequences such as a decrease in ambition and initiative and an increase in anxiety could occur if labeled as a nerd in school. However, corporations such as Geek Squad use the nerd image to sell their brand to the general public (Kendall, 2011). Kendall (2011) explained, "The nerd identity serves [Geek Squads] purposes to the extent that this is an identity that people associate with computer expertise" (p. 507).

Using a film titled, *The Social Network,* as an example, Tufekci (2014) examined how Mark Zuckerberg's primary reasons to be a programmer were portrayed as either an endeavor to impress an ex-girlfriend, which was inaccurate since he was dating his current spouse, or an attempt of inclusion into Harvard's exclusive clubs of WASPS. Whereas in today's geek-influenced culture, nerds such as Leonard from *The Big Bang Theory* or Liz Lemon from *30 Rock* give a positive portrayal of the geek and nerd subculture (Lapacek-Trout, 2014). Before, mainstream culture greatly misunderstood geek culture; therefore, mainstream culture projected the motivations which lacked any appreciation of geek culture's strengths (Tufekci, 2014).

However, according to DeLea (2012), after decades of tribulations, the nerd persona has become not so much a poisonous social association as more of an accepted identity. Bednarek (2012) explained as technology became more advanced, nerdish characteristics, specifically interest in technology, became more prevalent. As previously stated, companies like Geek Squad used the association society has connecting geeks with technology to their advantage (Rentzsch et al., 2011)

According to Hardwick (2011), people who identify with being nerds and knew how to work technology suddenly become the captains of industry. Creator of Microsoft

and billionaire Bill Gates once made a speech which claimed people should be nice to nerds because they may work for the nerds someday (Lapacek-Trout, 2014). Gates' success came and continues to come from his nerdish characteristics, mostly involving all things technological and scientific (Bednarek, 2012).

Williams (2013) argued geek culture has vastly integrated itself into popular culture by means of superhero and science fiction movies such as *Iron Man* and the *Star Wars* franchise. While waiting for the next geek film, people could reread, re-watch, reabsorb whatever they loved, which created a new idiosyncratic love to the culture (Oswalt, 2010). Social media has assisted in the expansion of geek culture as it has allowed enthusiasts to announce and engage in their passion with a widespread audience, which in turn encouraged others to follow suit (Williams, 2013).

Lapacek-Trout (2014) acknowledged, "After years of nerds being the object of social disdain and ridicule, the nerd's intelligence, social awkwardness and attachment to comic books and video games have become endearing" (p. 1). Gordon (2013) stated "In news that is not actually news, nerds are no longer the shameful outsiders of society, they are celebrated and treated like exotic zoo animals, adorable and mystical and called fake by other exotic zoo animals" (para. 1). Lapacek-Trout (2014) explained fake nerds are created through the expansion and acceptance of nerd culture as a societal norm. The nerds and geeks who were dubbed as such before society deemed it cool tend to be suspicious of the mass amount of nerds and geeks who started flooding the subculture (Lapacek-Trout, 2014).

Tufekci (2014) argued against the idea of geek culture's mainstream impact as attributed to the rise of wealth in the information technology sector. Tufecki (2014)

contended geek culture was initially attractive “for young geeks, who are often maligned as socially inept misfits clinging to each other in low-status huddles” (para. 1). In essence, before the so-called geek title became mainstream, it was something that had to be earned (Lowenthal, 2011).

In the 1980s, the general stereotype for geek was a societal outcast who read comic books and played video games (Tocci, 2009). However, by the early 2000s, instead of being outcast for their hobbies, people were thought of being ahead of the curve (Oswalt, 2010). The problem with creating the abundance of geek culture is instead of creating a new generation of individual thinkers with unique interests and hobbies, the industry is creating an army of sated consumers (Williams, 2013).

Lowenthal (2011) agreed the incentives of being a geek are strong enough that many people who used to ridicule geeks are now jumping on the bandwagon. Tufekci (2014) added the reason many millennials are positively drawn to geek culture is due to the joy of making things. Tufekci (2014) explained “more jobs are reduced to pushing electronic paper or reading scripts to customers, or otherwise turned into endeavors with little to no autonomy, geek culture stands out as a place where creativity, imagination and ingenuity are prized” (para 2).

Application of the I-E-O Model

Magic the Gathering is an activity that connects many college-aged individuals by bringing them together through a common interest (Butler, 2014). Since Magic the Gathering can be viewed as an extracurricular activity, it fits well in the confines of the input definition of Astin and Antonio’s (2012) I-E-O model. Because students have engaged with each other while playing Magic the Gathering in the environment of

college and university campuses, the game indirectly shaped the outcomes of these students' institutional environment (Manley Lima, 2014). In the following sections, different aspects of development are discussed.

Whole-person development. Marsh (2014) claimed, "Education of the whole-person inevitably relates to many dimensions of learning, cognitive, affective, and psychomotor in Bloom's understanding, or cognitive, affective, and values in discussions about reflective practice" (p. 116). To this end, Borrego and Bernhard (2011) argued focusing on each individual's participation in society as a whole instead of focusing on the separate academic disciplines creates a more effective learning environment. According to Knowles, Holton, and Swanson (2015), the components necessary for whole-person development include "change, filling a need, learning as product, learning as process, learning as function, natural growth, control, shaping, development of competencies, fulfilment of potential, personal involvement, self-initiated, learner-evaluated, independent learning, and learning domains" (p. 17).

Whole-person development was best expressed using Kolb's 1984 experiential learning theory (University of Leicester, 2016). Kolb, Boyatzis, and Mainemelis (2000) explained experiential learning theory "provides a holistic model of the learning process and a multilinear model of adult development, both of which are consistent with what we know about how people learn, grow, and develop" (p. 2). The reasoning behind the term experiential learning was "to emphasize the central role that experience plays in the learning process, an emphasis that distinguishes [Experiential Learning Theory] from other learning theories" (University of Leicester, 2016, para. 2).

Four stages exist in Kolb's experiential learning cycle: Concrete Experience, Reflective Observation, Abstract Conceptualism, and Active Experimentation (Kolb & Kolb, 2008). Concrete experience includes active involvement of individuals in order to learn a task (University of Leicester, 2016). Kolb et al. (2000) explained "concrete experiences are the basis for observations and reflections" (p. 3). Reflective observation includes reviewing the actions taken during the concrete experience (University of Leicester, 2016). Kolb and Kolb (2008) expounded the purpose of reflections are to assimilate what is learned and apply it best to their conception of the experience.

During the abstract conceptualism process, individuals make sense of the actions that have occurred by interpreting and understanding the relationship between the events (University of Leicester, 2016). Kolb et. al (2000) explained the individuals use abstract conceptualism to distill the reflections into abstract concepts so an action can be drawn. During the final stage of the learning cycle, active experimentation, individuals consider how to apply the information they learned (University of Leicester, 2016). Kolb and Kolb (2008) further explained individuals process this information to create a new understanding of the experience.

Academic development. From the seventeenth century to the nineteenth century, the earliest institutions of higher education in the United States catered to a select population, degree completion was uncommon, and universities focused more on their survival than student graduation (Berger, Ramirez, & Lyons, 2012). The Morrill Land Grant Act of 1862 created monumental changes in higher education, which assisted the growth of cities and urban life in the early 1900s (Demetriou & Schmitz-Sciborski, 2011). Emerging urban lifestyles created a greater need for postsecondary learning and

degree attainment (Berger et al., 2012). Additionally, the increased demand for university trained scientists to work in industrialized areas led to changes in the ways knowledge was organized and taught in institutions of higher education (Demetriou & Schmitz-Sciborski, 2011). During this time, undergraduate retention and graduation began to grow (Demetriou & Schmitz-Sciborski, 2011).

According to Demetriou and Schmitz-Sciborski (2011), the initial studies of undergraduate retention occurred in the 1930s. Demetriou and Schmitz-Sciborski (2011) noted one particular study: "a 1938 study lead by John McNeely and published by the U.S. Department of Interior and the Office of Education collected data from 60 institutions and examined demographic characteristics, social engagement and reasons for departure" (p. 301). This revolutionary study was considered by many researchers to be the forerunner for many educational studies that occurred during the 1960s when undergraduate retention was formed into a subfield of higher education (Berger et al., 2012).

According to Demetriou and Schmitz-Sciborski (2011), the introduction of the GI Bill after World War II influenced college student enrollment causing another growth in higher education. Over two million veterans enrolled in colleges and universities using the GI Bill by 1950 (Thelin, 2004). Throughout the 1950s, colleges and universities began to actively monitor student enrollment (Thelin, 2004).

By the 1960s, the pressure of rapid enrollment growth became apparent on college and university campuses across the country (Berger et al., 2012). The increased enrollment caused low-income families to have greater access to higher education (Demetriou & Schmitz-Sciborski, 2011). During the 1960s, the student discontent on

college and university campuses due to war and politics raised questions about who was attending colleges and universities, who was succeeding in them, and who the college graduates were in American society (Berger et al., 2012).

In 1965, The Higher Education Act allowed more access to colleges and universities by providing students with financial support (Demetriou & Schmitz-Sciborski, 2011). By 1969, colleges and universities considered retention a primary concern (Demetriou & Schmitz-Sciborski, 2011). During the latter half of the 1960s, Alexander Astin and Alan Bayer, student development theorists from the American Council on Education, created studies which took a comprehensive and methodical examination of student attrition (Berger et al., 2012). After findings from Astin's and Bayer's studies have been published, colleges and universities developed research activities designed to understand and support retention (Demetriou & Schmitz-Sciborski, 2011).

Berger et al. (2012) suggested the 1970s was the beginning of retention theory in regards to higher education. The first widely accepted model in retention study was Spady's (1970) model of student dropout in higher education. Spady (1970) proposed academic potential, normative congruence, grade performance, intellectual development and friendship support each contributed to social integration and could be linked to students' decision to drop out of college or university through the variables of satisfaction and commitment.

Tinto (2009) proposed in his model of student integration that student attrition was linked to formal academic experiences, informal academic experiences, and social integration. In his model, Tinto (2009) suggested the degree of success students have in

their pursuit of higher education affects the level of commitment they have to an institution. According to Demetriou and Schmitz-Sciborski (2011), "Tinto has revised and added to his model over the three decades since the initial publication of his student integration theory" (p. 302).

By 1980, college and university enrollment rates began to decline, which caused the development and practice of enrollment management (Berger et al., 2012). Hossler (1984) explained enrollment management encompassed all aspects of marketing and student recruitment, including admissions and financial aid (Hossler, 1984). Enrollment management administrators work to aid in collaboration between academic and student affairs in order to encourage student recruitment, admission, and retention (Demetriou & Schmitz-Sciborski, 2011).

Astin (1984) stressed the importance of background characteristics such as distance from home, socioeconomic status, and satisfaction in determining why students depart from higher education institutions. Astin (1984) also found in his study that gender roles play a part in why students drop out of higher institutions. Astin later revised his model to include the social influence on determining student retention and departure (Berger et al., 2012).

In the early 1990s, most of the literature on student retention was based on admitting and keeping students who came from the minority population (Demetriou & Schmitz-Sciborski, 2011). Many colleges and universities focused on embracing diversity and promoting multiculturalism in order to encourage student retention (Swail, 2004). In the late 1990s, colleges and universities focused heavily on understanding student transition periods, primarily the first-year experience (Demetriou & Schmitz-

Sciborski, 2011). Colleges and universities also focused on providing quality support services to meet the needs of transitioning students (Demetriou & Schmitz-Sciborski, 2011).

In Swail's (2004) framework for student retention, he suggested calculated collaboration among recruitment and admissions, academic services, curriculum and instruction, student services, and financial aid while using an efficient student monitoring system. Astin and Antonio (2012) proposed the interactions students have with faculty influence their intent to remain at the university. Astin and Antonio (2012) also stressed the need for effective counseling and advising programs for all students.

Since the early 2000s, colleges and universities have stressed cross-departmental institutional responsibility to increase student retention (Astin & Antonio, 2012). By using holistic approaches, colleges and universities encouraged faculty and staff to influence undergraduate retention (Demetriou & Schmitz-Sciborski, 2011). Demetriou and Schmitz-Sciborski (2011) explained, "programs and initiatives designed to support undergraduate retention should address both formal and informal student experiences inside and outside of the classroom" (p. 303).

Astin and Antonio (2012) found the interactions between faculty and students directly influence undergraduate retention. Swail (2004) suggested undergraduate retention could be improved if colleges and universities offered easily-accessible academic, personal, and financial services. Furthermore, Swail (2004) explained interactions students have on campus with faculty and staff can influence their feeling of attachment to the institution. Astin and Antonio (2012) agreed the colleges and

universities that actively involves students in their learning creates an environment where students are more likely to succeed.

Career development. According to Savickas (2013), career development theorists have focused on the challenges and opportunities possible for students as they attempt to create a clear career outline that is adaptive to an ever-changing workforce which is unfamiliar to previous generations. Barch (2011) expounded, "Career development is a process that takes place over an individual's lifespan and each career decision makes an impact on future decisions, as well as the roles an individual will play" (p. iv). Henderson (2013) explained vocational psychologists have developed multiple theories regarding the process of career development.

Barch (2011) explained educators and employers gauge career development through the process of students and employees learning new skills. The career models Henderson (2013) used emphasized the importance of discovering self in multiple dimensions and understanding the autonomy of decision-making. Barch (2011) explained, "As an individual progress though the career stages, he or she makes career decisions and must master the tasks of each stage in order to successfully transition into the next stage" (p. iv). However, Ward (2014) argued, "Selves cannot be totally created outside the social milieu one is situated within, which can constrain one's actions and shape interactions with others" (pp. 719-720).

Savickas (2013) described how career concern is the "first and foremost dimension of career adaptability" (p. 159). Students identified four themes regarding concerns for their future careers: Time Perspective, Challenge of Self-Direction, Career Development, and Social and Emotional Development (Hill, 2011). Lapan et al. (2016)

claimed these four themes "express important issues and ideas often discussed in leading career development theories and research" (p. 134). Themes identified by students "encompass beliefs, feelings, values, and a disposition to act in certain ways in relation to career development" (Barch, 2011, p. 11).

According to Lapan et al. (2016), "Integrating career development work within a standards-based classroom curriculum is a promising approach to provide this valuable opportunity to all students" (p. 127). However, Henderson (2013) contended career development presents difficulties in terms of education because many college-age individuals juggle their multiple identities of student, employee, athlete, or other labels. Barch (2011) claimed many colleges, universities, and businesses use a concept called career maturity to determine an individual's readiness for making sound career decisions. Colleges, universities and businesses use career maturity to "gauge whether an individual has adequate information and the appropriate attitude to make decisions that allow progression into other stages of career development, and ultimately find career success" (Barch, 2011, pp. iv-v).

Summary

In this chapter, the literature which identified other studies that used Aston and Antonio's (2012) I-E-O model was reviewed. The literature regarding the history of extracurricular activities was also reviewed. The focused was then shifted to the benefit and impact of extracurricular activities on students' educational experience. Afterwards, the history of Magic the Gathering and its effect on society was explored. Thereafter, the history of geek culture and how the subgroup geek evolved to become a societal norm was explained. After the history and explanation of geek/nerd culture, the purpose of

whole-person development was then expounded. Following whole-person development was a section on the purpose of academic development. Finally, the last section of the chapter involved the purpose behind career development.

In Chapter Three, the problem and purpose of the study is revisited. The questions which guide the research are restated. Then, a clarification of the quantitative nature of the research design is given. Afterward, the ethical considerations of the research, followed by the population and the sample of the study are explained. Thereafter, the instrument used to gather data is described. The chapter is finished with an explanation of the process of data collection and analysis so the research can be duplicated.

Chapter Three: Methodology

Many higher education institutions rely heavily on extracurricular activities as a basis of student enrollment (Tinto, 2009). According to Redmond, Quin, Devitt, and Archbold (2011), students leave institutions because they fail to integrate into the social and academic communities of colleges and universities. Tinto (1987a) claimed the institution is responsible for creating an environment where the integration process is facilitated, which results in institutions having to evaluate their programs to ensure they are providing students with the most assimilated learning communities.

Astin and Antonio's (2012) I-E-O model was used as the conceptual framework of this study to assess how much, if any, Magic the Gathering contributes to college-aged individuals' whole-person, academic, and career development. According to York et al. (2015), the I-E-O model provides "a way to clearly identify academic success as an outcome and, therein, create a focused definition of academic success unclouded by aspects more accurately defined as inputs or environment" (p. 2). Astin and Antonio (2012) claimed the model was created to better understand how students' previous experiences affected their educational environment, and to what degree a program's outputs were conditioned from the inputs.

Bakoban and Aljarallah (2015) acknowledged extracurricular activities play an important role in many students' lives. As a result, many colleges and universities have dedicated a vast amount of time and resources to the development of supplementary activities within their institutions (Manlove, 2013). Bakoban and Aljarallah (2015) claimed these optional activities "positively impact the students' emotional, intellectual, social, and inter-personal development" (p. 2737).

According to Duke (2014), Magic the Gathering requires players to use analytical reasoning and deduction to strategize their plays in order to win. Due to the availability of over 15,000 Magic the Gathering cards, and most decks containing 60 cards, there is an almost limitless amount of combinations and strategies in every game played (Hau, Plotkin, & Tran, 2012). Therefore, collectible card games such as Magic the Gathering assist students in academic concepts (Turkay et al., 2012).

Woo (2012), however, argued Magic the Gathering players are generally viewed as winners only among their like peers because members of normal culture tend to view the geek sub-culture as awkward and unpopular. Busse (2013) claimed geeks are generally stigmatized due to their over-adoration of one particular hobby bordering on fanaticism. Busse (2013) also acknowledged geeks are aware of the external criticism; however, they have taken "particular pride in their otherness" (p. 77).

In this chapter, the problem and purpose of the study are overviewed. The questions which guide the research are also reiterated. Afterwards, the quantitative nature of the research design is explained. The ethical considerations of the research are elucidated. Subsequently, the population and the sample of the study are discussed. Thereafter, the instrument used to gather data is described. The chapter is finished through an explanation of the process of data collection and analysis so the research can be duplicated.

Problem and Purpose Overview

Roland (2015) commented, "It is well known that college students enroll but do not persist nor graduate with either a degree or a certificate" (p. 3). Scrivener and Coghlan (2011) found only one-third of students who register for college with the intent

to earning a degree actually meet this goal. Low graduation rates are problematic because more than two-thirds of employment in the United States require some type of postsecondary education (Kelly & Strawn, 2011). Therefore, it is imperative more people graduate with a degree from an institute of higher education (Roland, 2015).

Though early retention research resulted in broad persistence models, current studies have discovered the persistence patterns of various students in various institutional settings (Berger et al., 2012). Moreover, scholars suggest persistence research involving nontraditional students should abandon the smaller persistence theories and focus on the interaction between students and campuses (Berger et al., 2012). While explaining retention differences between nontraditional student groups can be useful, it can also be limiting when trying to create institutional practices that support student achievement (Manley Lima, 2014).

Tinto (1987b) argued student attrition is the result of students failing to make an emotional connection between themselves and the institution. Students must receive support, feedback, and should be involved in the campus community (Tinto, 2009). Tinto and Goodsell (1993) stated, "involvement in those communities, especially those that are directed toward student learning, is the vehicle through which student learning and development occur and persistence arises" (p. 132).

Broh (2002) agreed participation in extracurricular activities promotes student development and social growth among students, resulting in increased student achievement. Mahoney (2014) also found students' grades improve and students are less likely to drop out when they are in extracurricular activities. However, there is currently little such research pertaining to how non-traditional extracurricular activities assist in

development at institutions of higher education (Turkay et al., 2012). The purpose of this research was to gather quantitative information regarding college-aged individuals' perception of how much, if any, Magic the Gathering contributed to their whole-person, academic, and career development.

Research Questions

The following research questions guided the study:

1. What role, if any, does Magic the Gathering play in whole person development of college-aged individuals?
2. What role, if any, does Magic the Gathering play in academic development of college-aged individuals?
3. What role, if any, does Magic the Gathering play in career development of college-aged individuals?

Research Design

This study was quantitative in nature. According to Doyle (2011), scholarly work in the field of education is customarily qualitative. However, according to The Pell Institute and Pathways to College Network (2016), "Quantitative data analysis is helpful in evaluation because it provides quantifiable and easy to understand results" (para. 1). The quantitative approach also dismisses the values, biases, and subjective preferences of the research because opinion and bias have no place in the research (Fraenkel et al., 2014). As this study is the first of its kind, using a survey as a quantitative tool was appropriate because it allowed a broader perspective of the issue to be gained which could be used to further the research (Creswell, 2013).

For this study, information was aimed to be quantified using a cross-sectional survey research methodology because Creswell (2013) stated using surveys when trying to find the opinions of a large group of people about a particular topic or issue is beneficial. The research was considered cross-sectional because the study collected data from a predetermined population, and the information was only collected at one point of time (Fraenkel et al., 2014). Furthermore, the study used cross-sectional research surveys because the information was collected from a pre-determined population (Creswell, 2013), which was college-aged students who played Magic the Gathering. Fraenkel et al. (2014) explained the purpose of surveys is to describe the characteristics of a population, which is appropriate for this study because it directly relates to college-aged individuals' perception of how much, if any, Magic the Gathering affects their whole-person, academic, and career development.

Fraenkel et al. (2014) stated other quantitative methodologies are available, such as experimental research, single-subject research, correlational research, and causal-comparative research. Fraenkel et al. (2014) explained experimental research is "the best type [of methodology] for testing hypotheses about cause-and-effect relationships" (p. 265). However, since no hypotheses existed in this study, experimental research would not have been the appropriate methodology to apply (Fraenkel et al., 2014). Single-subject research is primarily used when there is a small population size (Fraenkel et al., 2014), so single-subject research would not have been appropriate for this study due to the large population size of the study. In regards to correlational research, Fraenkel et al. (2014) explained, "correlational studies investigate the possibility of relationships between only two variables" (p. 331). However, this research was not correlating any

variables, so correlational research was not appropriate. According to Fraenkel et al. (2014), causal-comparative research is used "to determine the cause or consequences of differences that already exist between or among groups" (p. 366). Causal-comparative could not be used in this research because no differences were apparent.

Qualitative research is primarily inductive and used to gather meaning from the collected data (Creswell, 2013). According to Creswell (2013), "Qualitative researchers tend to use open-ended questions so that participants can express their views" (p. 9). Fraenkel et al. (2014) defined qualitative research as "studies that investigate the quality of relationships, activities, situations, or materials" (p. 426). Since the intention of this research was to find if a connection existed between Magic the Gathering and whole-person, academic, and career development, and not to find a relationship, using qualitative research would not have been appropriate.

According to Creswell (2013), a mixed methods approach "involves gathering both numeric information (e.g., on instruments) as well as text information (e.g., on interviews) so that the final database represents both quantitative and qualitative information" (p. 20). Fraenkel et al. (2014) stated investigators use mixed-method research to provide a more complete understanding of the research problems. However, the purpose of this study was to find if there was enough evidence to show a connection between Magic the Gathering and whole-person, academic, and career development, so the best option for this study was quantitative research.

Population and Sample

The population of this study was college-aged individuals from different European and North American countries who played Magic the Gathering. Data from

Wizards of the Coast (2016d) revealed there are over 12 million Magic the Gathering players worldwide. However, due to the large amount of Magic the Gathering players not registered, the exact number of college-aged individuals who play Magic the Gathering cannot be determined (Seltman, 2015).

All valid surveys received from the population were used in this study. A survey was considered valid if it met four criteria: the survey was completed by a participant who played Magic the Gathering, the participant was a college-aged individual, the participant accepted the informed consent letter, and the participant completed the survey in full with question 38, the comment section, being optional. After the survey had closed, 104 valid surveys were available for analysis and were considered the sample.

Banerjee and Chaudhury (2010) stated generalization is possible without random sampling. Purposive sampling was used in this survey because each participant in the survey was selected because they appeared to possess the necessary information about the population (Fraenkel et al., 2014), which is to say they appeared to be a college-aged individual who played Magic the Gathering. However, Fraenkel et al. (2014) argued "The disadvantage of purposive sampling is the researcher's judgment may be in error – he or she may not be correct in estimating the representativeness of a sample or their expertise regarding the information needed" (p. 100).

Because participants for this study were purposively chosen, and all the surveys which met the participant criteria were used, no further sampling was employed. According to Bluman (2011), "If the subjects of a sample are properly selected, most of the time they should possess the same or similar characteristics as the subjects in the population" (p. 4). The larger the participation pool, the more accurate the portrayal of

Magic the Gathering's contribution to whole-person, academic, and career development should be (Bluman, 2011).

Between 50 and 75 surveys were expected to be received from participants based on pilot participation of the study. Due to the use of a web-based survey, more active participation was expected than if the surveys from attending tournaments were the only ones received because web-based surveys offer greater convenience for participants (Fraenkel et al., 2014). According to Fryrear (2015), social media websites, such as Facebook, are ideal locations for web-based research due to the enormity of the user base.

Instrumentation

A survey is the preferred type of data collection procedure for this study because it offered flexibility in reaching a population of college-aged individuals who played Magic the Gathering (Motley, 2013). An electronic survey created via SurveyMonkey titled Magic and Development (MAD) (see Appendix A) was used to collect descriptive data. The survey was developed and tested for practicality. Light, Singer, and Willett (1990) suggested surveys are an invaluable tool because they can "lead to improvements throughout the entire fabric of an institution" (p. 234).

Creswell (2013) explained surveys are beneficial because they allow a large number of individuals to participate in a study. In creating the survey, the guidelines set by Light et al. (1990) were followed by articulating clearly specified research questions, understanding the link between the research questions and the methodology, and refining the survey accordingly in regards to the research and work of others. The survey was tested for practicality on several occasions and refined the survey as necessary.

The survey consisted of a total of 38 prompts. The first two prompts addressed

the age requirement and provided the Lindenwood Informed Consent Form: Adult (see Appendix B). The subsequent six prompts were questions which explained the demographics of the participants. The following ten prompts specifically addressed research question one. The next ten prompts specifically addressed research question two. The ensuing nine prompts specifically addressed research question three with the exception of the thirty-first prompt, which was another demographic prompt. The last prompt on the survey encouraged participants to make comments if they chose. An overview of the alignment of the research questions to the MAD survey is presented in Table 1.

Table 1

Alignment of Research Questions to the MAD Survey.

Research Question	MAD Question	Notes
N/A	1, 2	Age requirement and Adult Consent Form
N/A	3, 4, 5, 6, 7, 8, 31	Questions that guide the demographic information
1	9, 10, 11, 12, 13 14, 15, 16, 17, 18	Magic the Gathering's effect on whole-person development
2	19, 20, 21, 22, 23, 24, 25, 26, 27, 28	Magic the Gathering's effect on academic development
3	29, 30, 32, 33, 34, 35, 36, 37	Magic the Gathering's effect on career development
N/A	38	Participant comments to guide further research

SurveyMonkey was used to develop MAD as an electronic survey. MAD was piloted using both electronic and paper copies, but the paper copies were found to be cumbersome and time-consuming by the pilot participants. By moving to a completely digital survey, the time it took for participants to respond to the survey questions drastically reduced. A Quick Response (QR) code was also developed for the survey so participants merely had to scan the code with their phone to allow them to take it at a time they found more convenient. A QR code is a data processing tool that decodes information using image sensors instead of using a linear scan like a barcode (Kneese, 2014).

The digital design of the survey automatically skipped questions that did not apply to the participant. By making the survey completely digital, the time to complete the survey was reduced, which is crucial for Magic the Gathering players who are on a strict time limit between games. Paper copies of the survey were not used because the pilot test of MAD found the paper copy took too much time to complete when participants had limited time availability.

Responses for the instrument were marked using various methods: Likert scales, multiple choice questions, and an open-ended question. The multiple choice questions generally involved yes or no questions or different ranges of age or collegiate level where the participants belonged. The Likert scale questions varied between one and five using a semantic differential with one being the lowest effect and five being the highest effect Magic the Gathering had toward the research question which guided the prompt. Fraenkel et al. (2014) explained researchers use semantic differential to measure the

participants' attitude toward a particular concept. The open-ended question at the end of the survey was intended for possible future studies.

Reliability. To address the potential limitations inherent in an untested instrument, the instrument was piloted twice (Fraenkel et al., 2014). The first pilot of the instrument was conducted at a Magic the Gathering professional tour qualifier tournament with 55 participants. The participants were willing to participate without incentive and gave feedback regarding the clarity of the survey. Based off this feedback, the instrument was adjusted as necessary to encompass the needs of future participants.

The changes made included listing the different stages of colleges to be inclusive of higher education institutions within Europe because many colleges and universities within Europe do not use terms such as freshman, sophomore, junior, or senior; instead, they use terms such as first year, second year, third year, and fourth year (Kaplan International Colleges, 2014). The layout of the survey on SurveyMonkey was also changed to skip questions not related to the participant. For example, if a participant selected that Magic the Gathering did not have an effect on the participant's selection of major, the question which asked how much of an effect Magic the Gathering had on selecting a major was skipped.

The instrument was once again tested at a Magic the Gathering Grand Prix tournament. At this second pilot, the instrument was validated by having at least 25 professional Magic the Gathering players take the survey and give feedback on its reliability. Regarding the reliability of the survey, assistance was received from the CEO and chairman of Mindsports Academy, the corporation that ran the 1600 player

tournament. The CEO's expertise in Magic the Gathering and gaming used as educational tools validated the reliability of the instrument.

Validity. Construct validity was used in this survey because it considered whether or not the measurements or values from an instrument truly represented the concepts under examination (Fraenkel et al., 2014). An instrument with high construct validity will measure values which greatly correlate with values from a previously well-established instrument for the concept being examined (Seltman, 2015). At the time this study was conducted, no such instrument existed, so there was no "gold standard" (Seltman, 2015, p. 199). Therefore, an instrument was created by using the test-retest method. By piloting and adjusting the instrument until it was concise to all pilot participants, the statistical variance was reduced, and the instrument was considered reliable due to the test-retest reliability measurement (Seltman, 2015).

Fraenkel et al. (2014) defined construct validity as "a characteristic of devised measurements that describes how well the measurement can stand in for the scientific concepts . . . that are the real targets of scientific learning and inference" (p. 199). According to Fraenkel et al. (2014), "construct-related evidence refers to the nature of the psychological construct or characteristic being measured by the instrument" (p. 148). Therefore, an instrument with high construct validity should elucidate how well "a measure of the construct explains differences in the behavior of individuals or their performance on certain tasks" (Fraenkel et al., 2014, p. 148).

Therefore, in regards to this study, the construct related evidence measured how much, if any, Magic the Gathering played a role in creating differences in behavior or an individual's performance on certain tasks. Even though no "gold standard" (Seltman,

2015, p. 199) was available, the instrument was considered to have high construct validity due to having an expert in Magic the Gathering, gaming, and education at the second pilot of the instrument confirm the instrument as reliable for obtaining the responses for which the researcher was attempting to test. The high construct validity of the instrument was used to assert the information received from administering the survey (Seltman, 2015) relayed accurate inferences about the degree in which Magic the Gathering affects college-aged individuals whole-person, academic, and career development.

Seltman (2015) explained high construct validity occurs after operational definitions of the variables are classified. Furthermore, Fraenkel et al. (2014) stressed "a researcher must carry out a series of studies to obtain a variety of evidence suggesting that the scores from a particular instrument can be used to draw correct inferences about the variable that the instrument purports to measure" (pp. 153-154). Creswell (2013) claimed surveys provide generalized results that can postulate a quantitative description regarding trends of a population.

Data Collection

After receiving Lindenwood IRB approval (see Appendix C), data collection began. Two means of data collection were employed, one in the physical world and one in the virtual world. The virtual recruitment strategy was intended to increase the participant pool (Pew Research Center, 2016). Having already gained permission from Wizards of the Coast (see Appendix D), a booth was set up at Magic the Gathering tournaments, gaming clubs, and comic book stores to recruit potential participants by asking players to take the survey. An informal question was asked which verified age

and interest of passersby. If the passersby were of age, they were asked if they were interested in taking the survey.

If potential participants agreed to take the survey, the participants were given the link to MAD via Facebook or by a QR Code. If the potential participants did not have a cell phone available to access Facebook or to read the QR Code, a laptop was accessible for potential participants to take the survey. In the virtual world, a discussion thread was created via Facebook and the Cork Magic the Gathering website to recruit potential participants. Data collection ended one week after receiving a minimum of 50 valid MAD surveys. In total, 143 responses were collected, of which 104 were considered valid.

The survey closed exactly one week after receiving 50 participants. The one-week time frame was supported by an analysis conducted by SurveyMonkey (2011) of 500,000 survey responses gathered through their software between 2009 and 2010. Through this analysis, SurveyMonkey (2011) established that 80% of total responses ultimately collected for any given survey were collected within the first seven days after launch with any size sample. Due to SurveyMonkey's research, waiting longer than seven days to collect information after the initial 50 surveys were received seemed unnecessary.

Data Analysis

After enough surveys by qualified participants were collected, the numbers were analyzed and the results were interpreted. All data were collected from the website SurveyMonkey. The Analyze Results feature of SurveyMonkey allowed the researcher

to organize the data to view individual results and create an outline for analysis. Each response for each participant who took the survey is available for analysis.

Descriptive statistics were appropriate for this research because the information would be difficult to visualize if only the raw data were presented (Lund & Lund, 2013). Therefore, descriptive statistics were used to present the data in a meaningful way, which will help school administrators interpret the data more easily (Lund & Lund, 2013). Descriptive statistics were also used because a survey of this nature has never been performed before, and information could be gained through descriptive statistics by using only a few indices (Madrigal & McClain, 2012). Christensen, Johnson, and Turner (2014) argued descriptive statistics are an appropriate means of analyzing data because it would allow the research to be meaningfully described so the data could guide others in understanding an unfamiliar topic.

In this study, data gathered from the questions on the survey to describe Magic the Gathering's role, if any, on whole-person, academic, and career development were used. According to Bluman (2011), the purpose of descriptive statistics is to describe situations using data. Descriptive statistics were used for questions 9-37, with question 31 being excluded. Questions 1-8 and 31 were used as demographic questions. Question 38 was an open-ended comments section for participants to fill in if they wanted to leave concerns about the survey, what they thought would make the survey better, or any general comments about the research; the results of which were analyzed and used to formulate recommendations for future research.

Ethical Considerations

Researchers can face many ethical issues throughout the research process (Creswell, 2013). Therefore, it is imperative researchers are "always conscious of protecting and securing the rights, dignity, and welfare of all participants" (Roland, 2015, p. 108). Consequently, it was understandable why the Lindenwood Institutional Review Board application submission required an overview of the purpose of the research, procedure for data collection, potential risks for participants, benefits gained by participants, data storage and protection, and procedures performed.

Fraenkel et al. (2014) rationalized the importance of protecting participants by explaining researchers will not find participants if the research is unethical. As result, it would be almost impossible to uncover any new information or progress research (Creswell, 2013). As per Lindenwood University (2016) IRB review guidelines, the participants were protected and assured confidentiality and anonymity in a multitude of ways.

In this study, participants were not asked any questions regarding sensitive topics. Also, no personal identifiers were included within the survey. The survey was only available through SurveyMonkey, and the researcher was the only individual who had access to the password. The information was only accessed on a personal computer via a secure server. All data were permanently erased/destroyed three years from completion of the research project.

Before taking the survey, each participant was required to read and respond to question one of the survey, which was age verification, and question two of the survey, which was the informed consent letter that described in detail the purpose of the research,

any possible risks, and the opportunity to opt out of the study at any time without negative effects or repercussions. If participants did not accept the information within the informed consent letter, then the participants were not allowed to access the rest of the survey. Participants willing to take the survey were not rewarded, and all participants took the survey of their own free will.

Summary

In this chapter, the problem and purpose of the study were outlined. Then, the questions which guided the research were restated. Afterwards, the quantitative nature of the research design was justified. Subsequently, the ethical considerations of the research were described. Following the ethical considerations of the research, the population and the sample of the study were reviewed. Next, the instrument used to gather data and the purpose of each of the questions within the instrument was explained. The chapter was finished with an explanation of why descriptive statistics were used to collect data.

In Chapter Four, the raw data are converted into the overarching analysis of the research. First, an overview of the problem and purpose is provided. Then the instrumentation and data collection are reviewed. A detailed analysis of the data is given using charts and tables. The chapter is completed by findings for each research question in the data analysis section being presented.

Chapter Four: Analysis of Data

Researchers have agreed extracurricular activities are an integral aspect of the education experience, and students who are involved in extracurricular activities demonstrate higher interpersonal competency skills (Bartkus, Nemelka, Nemelka, & Gardner, 2012). Arlt (2011), however, found little academic research exists regarding hobby game fan cultures such as Magic the Gathering, which detracts from the possibility of higher education using gaming as a sponsored extracurricular activity. However, Magic the Gathering, as an extracurricular activity, could possibly create a cultural space for students who were shaped by geek culture and give them a sense of belonging (Limbert, 2012).

In this chapter, the statement and the problem is reviewed. Then the instrument is reassessed. Afterward, the data collection process is re-examined. Next, the reliability and validity of the results are examined. Finally, an in-depth analysis of the study is described and an explanation of the results is discussed.

Problem and Purpose Overview

Through their research, Bucknavage and Worrel (2005) found "school-sanctioned extracurricular activities play an important role in the lives of students, parents, and school personnel, and a great deal of time and money are devoted to these activities" (p. 74). However, Shipley (2015) noted a wide division between extracurricular activities and education institutions due to a system which places certain cognitive activities above others. Bartkus et al. (2012) confirmed there is inadequate guidance on how extracurricular activities should be classified.

School dropout is a significant problem for young students because it accelerates them into adult roles before their social-cognitive capacities have matured (Mahoney, 2014). The risk of student drop-out is influenced by social relationships (Tinto, 2009). Mahoney (2014) found people who share interest and form their own extracurricular activities become interested in the institution or, at the very least, school engagement in general.

The purpose of this research was to gather quantitative information regarding college-aged individuals' perception of Magic the Gathering's contribution to their whole-person, academic, and career development. Higher education institutions could use the results in this research as a guide on how to create non-traditional extracurricular activities to create an all-inclusive environment. Sociologists could also use this information to study habits of this subset of students.

Data Analysis

In this study, data were gathered from the questions on the survey to describe Magic the Gathering's role, if any, on whole-person, academic, and career development. According to Banerjee and Chaudhury (2010), it is customary in descriptive statistics "to define a study population and then make observations on a sample taken from it. Study populations may be defined by geographic location, age, sex, with additional definitions of attributes and variables such as occupation, religion and ethnic group" (para. 10). For this research, the population of college-aged individuals who played Magic the Gathering was studied.

After data were collected, raw data from the electronic survey for each participant's response were downloaded. To ensure respondent anonymity, no personal

identifiers, such as names or email addresses, were collected. However, SurveyMonkey automatically identified the IP address of each device of the participant who took the survey to ensure each participant was only identifiable via the alphanumeric code generated by SurveyMonkey, so all IP addresses linked to the raw data were deleted. All data were analyzed using the Data Analysis ToolPak feature in Microsoft Excel.

Data gathered from survey question 1 were removed because it was age-verification validation which authorized participants to take the survey, and the data did not add any information to the research. If anyone under the age of 18 attempted to take the survey, the survey automatically ended. After participants passed the age verification question, they agreed to the informed consent for participation in research activities adult consent form to move on to question 3 of the survey. Data gathered from question 2 were also removed because it served as the informed consent for participation in research activities form from Lindenwood University. If a participant declined the informed consent for participation in research activities form, then the survey ended automatically.

Questions 1 and 2 of the study were the only questions removed because they did not assist with the survey; instead, they were used to ensure the age requirement and consent to participate in the study. Questions 3, 4, 5, 6, 7, 8, and 31 were all included to understand the demographics of the participants who took the study and were not used to answer the questions which guided the research. Hammer (2011) explained without the inclusion of demographic information, researchers would risk assuming the interest of the participants are the same regardless of the culture. Each demographic question in this study led to survey questions which were used to answer the questions that guided the

research. The purpose of the demographic questions was to allow participants to skip questions in the survey which did not apply to them.

Questions 3 through 8 and 31 were demographic questions which led the participant to questions that applied directly to them. The demographic questions were necessary because "a thorough description of participants allows readers and researchers to whom research findings generalize and allows for comparisons to be made across replications of studies" (Hammer, 2011, p. 261). Therefore, the demographic questions were used to ensure the survey was valid for the intended population.

The descriptive statistics for responses to questions 9-18 were tabulated to answer Research Question One. The descriptive statistics for responses to questions 19 through 28 were then tabulated to answer Research Question Two. The descriptive statistics for responses to questions 29-30 and 32-37 were tabulated to answer Research Question Three. Responses to question 38, the open-ended comments at the end of the survey, were used in formulating recommendations for future research.

There were two parts to each set of questions for each of the sections which divided the research questions. The first question in the set was designed as a yes or no question. If participants answered *No* to any given question, the survey automatically skipped the next question which contained the Likert scale, which was used to find what role, if any, Magic the Gathering played in whole-person, academic, or career development.

There were five yes and no questions used to answer Research Question One, which were answered a total of 406 times: *Yes* was answered 167 times (41%), and *No* was answered 239 times (59%). There were five yes and no questions used to answer

Research Question Two, which were answered a total of 520 times: *Yes* was answered 272 times (52%), and *No* was answered 248 times (48%). There were four *Yes* and *No* questions used to answer Research Question Three, which were answered a total of 403 times: *Yes* was answered 44 times (11%), and *No* was answered 359 times (89%).

Findings from research question one. The first research question was *What role, if any, does Magic the Gathering play in the whole-person development of college-aged individuals?* The research question was analyzed by obtaining the descriptive statistics for the frequency of distribution per Likert scale in each set of questions 9-18 of the survey questions. If participants answered *No* to any given questions, then Magic the Gathering played no role for that set in whole-person development. However, if participants answered *Yes* to the first survey question of the set, then the survey would move on to a Likert scale question regarding the role Magic the Gathering played in whole-person development. By using the Likert scale, participants could gauge the role Magic the Gathering played in their whole-person development.

Question 9 automatically had fewer responses because it was only available to participants who answered *Yes* to demographic question 8, *Did you drop out of college or university*? Question 9 was developed to ask participants if they perceived Magic the Gathering as having a role in their decision to drop out of higher education. Fifteen participants answered this question: 14 (93%) responded *No* and 1 (6%) responded *Yes*. If participants answered *No* to question 9, then they would skip question 10. This question did not give any positive or negative analysis to the role Magic the Gathering played in whole-person development, but a determination through the analysis was made

which acknowledged Magic the Gathering had almost no effect on participants' decision to drop out of higher education.

Question 10 was developed to ask participants how much of a role, if any, Magic the Gathering had in their decision to decision to drop out of higher education. The data were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's role in the participant's decision to drop out of higher education. The information was then charted to assist in answering Research Question One.

Question 11 was specific to whether or not participants perceived Magic the Gathering playing a role in how much they participated in campus events. Seventy-nine participants answered this question: 46 (58%) responded *No* and 33 (42%) responded *Yes*. If participants answered *No* to question 11, they would then skip question 12. Respondents did not give positive or negative analysis to the role Magic the Gathering played in whole-person development, but a determination through the analysis was made which acknowledged Magic the Gathering had somewhat of a role on participants' decision to participate in campus events.

Question 12 was specific to the perceived amount of influence Magic the Gathering had in the participants' decision to participate in campus events. The data were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's role in the participant's decision to participate in

campus events. Thirty-three participants moved to question 12 by answering *Yes* to survey question 11.

Zero (0%) participants responded Magic the Gathering had *very little* influence on their decision to participate in campus events. Three (9%) participants responded Magic the Gathering had *little* influence on their decision to participate in campus events. Twenty (61%) participants responded Magic the Gathering had *somewhat* of an influence on their decision to participate in campus events. Five (15%) participants responded Magic the Gathering had *a lot* of influence on their decision to participate in campus events. Five (15%) participants responded Magic the Gathering had *substantial* influence on their decision to participate in campus events. The information was then charted to assist in answering research question one. In Figure 1, participants' perception of how Magic the Gathering influenced their participation in campus events is shown.

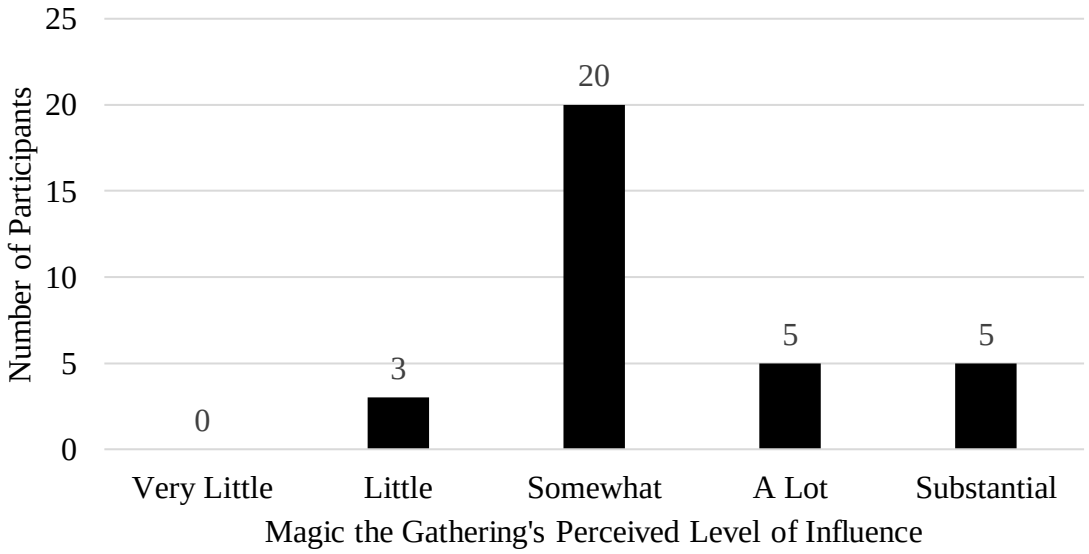

Figure 1. The perceived role of Magic the Gathering's influence regarding participation in campus events.

Question 13 was specific to whether or not participants perceived Magic the Gathering playing a role in their whole-person development. One hundred four participants answered this question: 18 (17%) responded *No* and 86 (83%) responded *Yes*. If participants answered *No* to question 13, then they skipped question 14. Through this question, most participants positively perceived Magic the Gathering as playing a role in their whole-person development.

Question 14 was specific to the perceived amount Magic the Gathering had in defining the participant as a person. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's role in the participant's whole-person development. Eighty-six participants moved to question 14 by answering *Yes* to survey question 13.

Nine (10%) participants responded Magic the Gathering had *very little* influence on their whole-person development. Forty (47%) participants responded Magic the Gathering had *little* influence on their whole-person development. Twenty-four (28%) participants responded Magic the Gathering had *somewhat* of an influence on their whole-person development. Twelve (14%) participants responded Magic the Gathering had *a lot* of influence on their whole-person development. One (1%) participant responded Magic the Gathering had *substantial* influence on their whole-person development. The information was then charted to assist in answering research question one. In Figure 2, participants' perception of how Magic the Gathering influenced their whole-person development is shown.

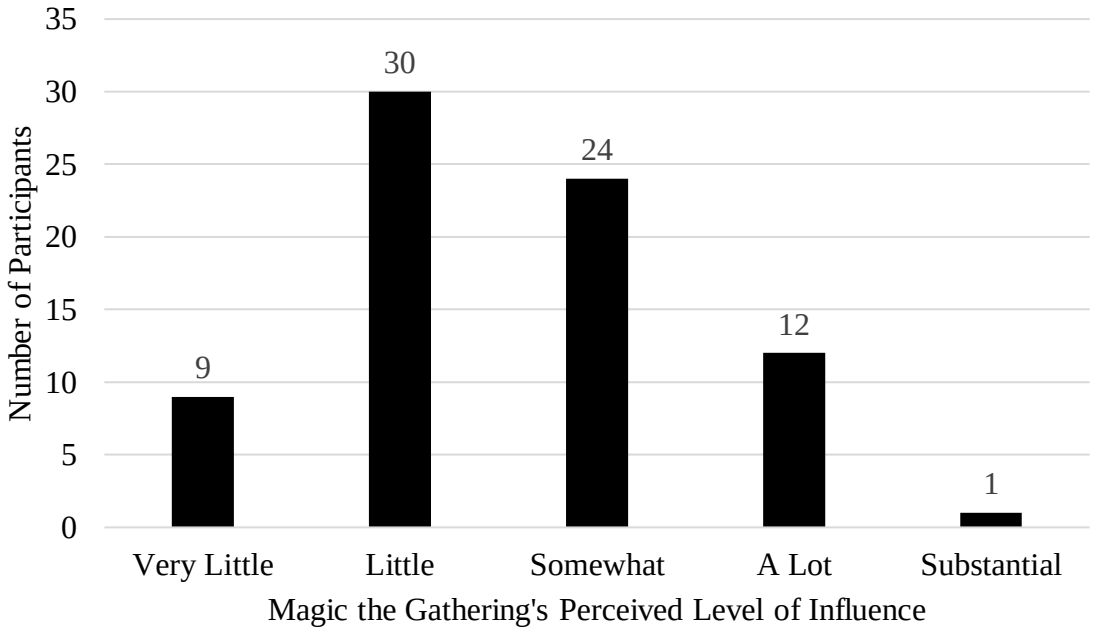

Figure 2. The perceived role of how much Magic the Gathering defined participants.

Question 15 was specific to whether or not participants perceived Magic the Gathering playing a role in how much they participated in class. One hundred four participants answered this question: 86 (83%) responded *No* and 18 (17%) responded *Yes.* If participants answered *No* to question 15, they would then skip question 16. This question did not give any positive or negative analysis to the role Magic the Gathering played in whole-person development, but a determination through the analysis was made which acknowledged Magic the Gathering had little effect on participants' decision to participate in class.

Question 16 was specific to the perceived amount Magic the Gathering influenced the participant to participate in class. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's

role in the participant's decision to participate in class. Eighteen participants moved to question 16 by answering *Yes* to survey question 15.

Two (11%) participants responded Magic the Gathering had *very little* influence on their decision to participate in class. One (6%) participant responded Magic the Gathering had *little* influence on their decision to participate in class. Nine (50%) participants responded Magic the Gathering had *somewhat* of an influence on their decision to participate in class. Four (22%) participants responded Magic the Gathering had *a lot* of influence on their decision to participate in class. Two (11%) participants responded Magic the Gathering had *substantial* influence on their decision to participate in class. The information was then charted to assist in answering research question one. In Figure 3, participants' perception of how Magic the Gathering influenced their participation in class is shown.

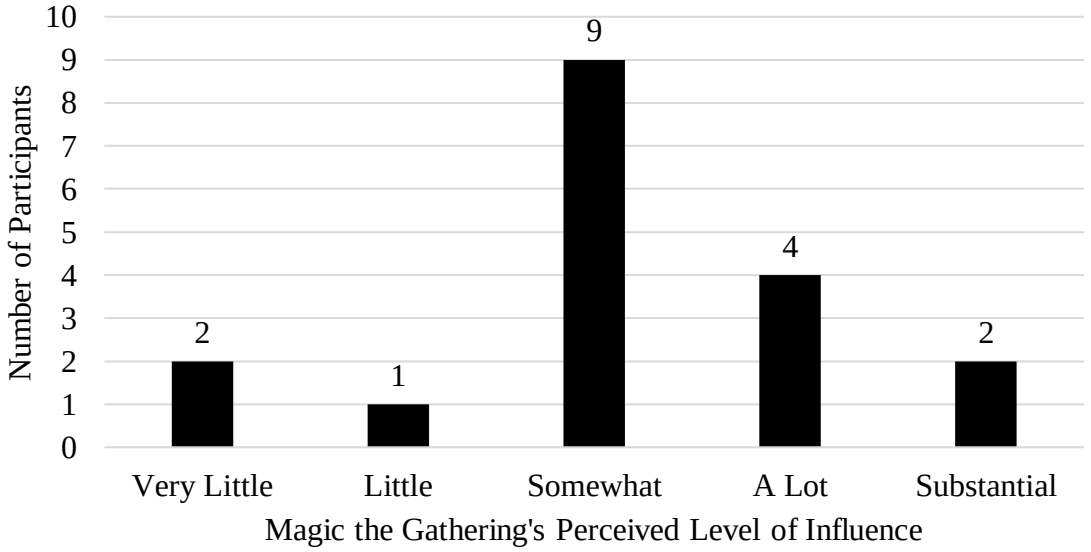

Figure 3. The perceived role of how much Magic the Gathering influenced participants to participate in class.

Question 17 was specific to whether or not participants perceived Magic the Gathering playing a role in how much they skipped class. One hundred four participants answered this question: 88 (85%) responded *No* and 16 (15%) responded *Yes*. If participants answered *No* to question 17, then they skipped question 18. This question did not give any positive or negative analysis to the role Magic the Gathering played in whole-person development, but a determination through the analysis was made which acknowledged most participants did not perceive Magic the Gathering as having a role in their decision to skip class.

Question 18 was specific to how often participants would skip class to play Magic the Gathering. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the varying levels in regards to the perceived amount of Magic the Gathering's role in the participant's decision to participate in campus events. Sixteen participants moved to question 18 by answering *Yes* to survey question 17.

Nine (56%) participants responded they had skipped class 1-2 times per semester to play Magic the Gathering. Two (13%) participants responded they had skipped class 3-4 times per semester to play Magic the Gathering. One (6%) participant responded they had skipped class 5-6 times per semester to play Magic the Gathering. One (6%) participant responded they had skipped class 7-8 times per semester to play Magic the Gathering. Three (19%) participants responded they had skipped class 9 or more times per semester to play Magic the Gathering. The information was then charted to assist in answering research question one. In Figure 4, participants' range in regards to how often they skipped class per semester to play Magic the Gathering is shown.

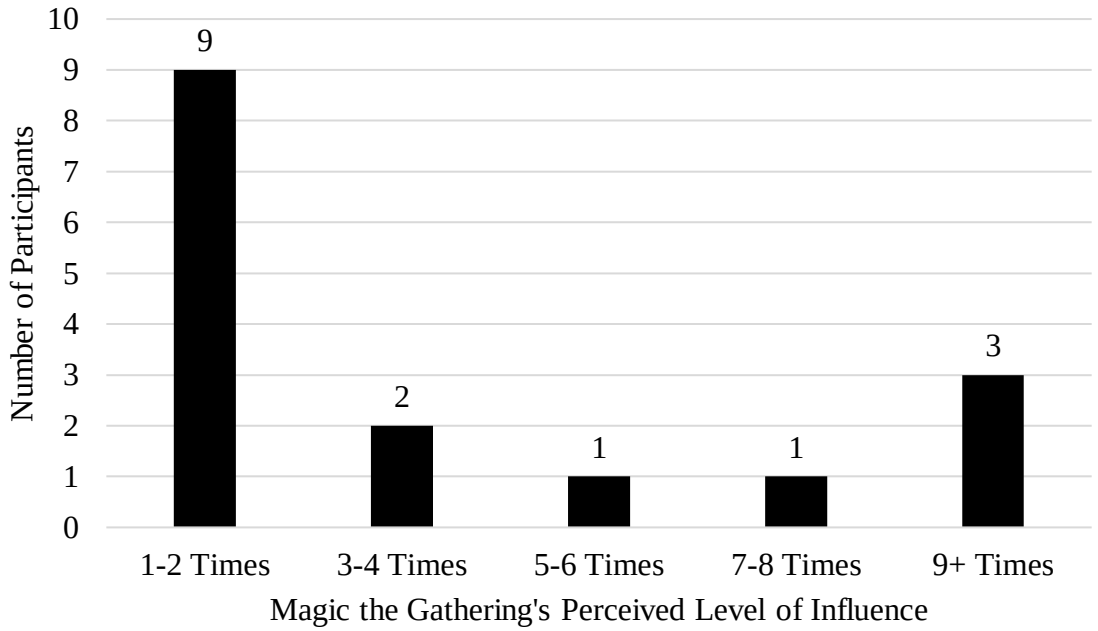

Figure 4. The perceived role of how much Magic the Gathering influenced participants to skip class.

Findings from research question two. The second research question was *What role, if any, does Magic the Gathering play in academic development of college-aged individuals?* The research question was analyzed by obtaining the descriptive statistics for the frequency of distribution per Likert scale in each set of questions 19-28 of the survey questions. If participants answered *No* to any given questions, then Magic the Gathering played no role for that set in academic development. However, if participants answered *Yes* to the first survey question of a set, then the survey would move on to a Likert scale question regarding the role Magic the Gathering played in academic development. By using the Likert scale, participants could gauge the role Magic the Gathering played in their academic development.

Question 19 was specific to whether or not participants perceived Magic the Gathering playing a role in helping their reading ability. One hundred four participants answered this question: 41 (39%) responded *No* and 63 (61%) responded *Yes*. If participants answered *No* to question 19, they would then skip question 20. This question showed a positive analysis to the role Magic the Gathering played in academic development. A determination through the analysis was made which acknowledged Magic the Gathering had a positive effect on participants' reading ability.

Question 20 was specific to the perceived amount Magic the Gathering helped participants with their reading ability. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's effect on participants' reading ability. Sixty-three participants moved to question 20 by answering *Yes* to survey question 19.

Five (8%) participants responded Magic the Gathering had *very little* influence on their reading ability. Seven (11%) participants responded Magic the Gathering had *little* influence on their reading ability. Twenty-eight (44%) participants responded Magic the Gathering had *somewhat* of an influence on their reading ability. Sixteen (25%) participants responded Magic the Gathering had *a lot* of influence on their reading ability. Seven (11%) participants responded Magic the Gathering had *substantial* influence on their reading ability. The information was then charted to assist in answering research question two. In Figure 5, participants' perception of how Magic the Gathering influenced their participation in campus events is shown.

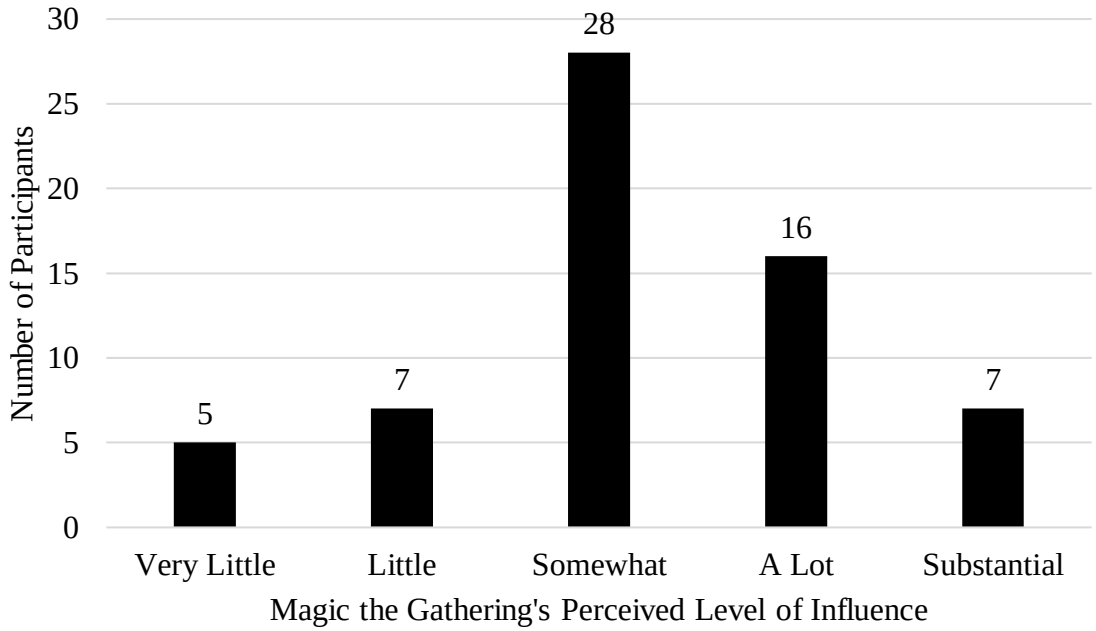

Figure 5. The perceived role of how much Magic the Gathering helped participants' reading abilities.

Question 21 was specific to whether or not participants perceived Magic the Gathering playing a role in helping their ability to understand processes. One hundred four participants answered this question: 15 (14%) responded *No* and 89 (86%) responded *Yes*. If participants answered *No* to question 21, then they skipped question 22. Due to the responses of this question, a positive analysis was made regarding the perceived role Magic the Gathering played in academic development. A determination through the analysis was made which acknowledged Magic the Gathering had a positive effect on participants' ability to understand processes.

Question 22 was specific to the perceived amount Magic the Gathering assisted participants with understanding processes. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between

very little and *substantial* in regards to the perceived amount of Magic the Gathering's effect on participants' ability to understand processes. Eighty-nine participants moved to question 22 by answering *Yes* to survey question 20.

One (1%) participant responded Magic the Gathering had *very little* influence on their ability to understand processes. Twelve (14%) participants responded Magic the Gathering had *little* influence on their ability to understand processes. Twenty-nine (32%) participants responded Magic the Gathering had *somewhat* of an influence on their ability to understand processes. Thirty-five (39%) participants responded Magic the Gathering had *a lot* of influence on their ability to understand processes. Twelve (14%) participants responded Magic the Gathering had *substantial* influence on their ability to understand processes. The information was then charted to assist in answering research question two. In Figure 6, participants' perception of the role Magic the Gathering played in their ability to understand processes is shown.

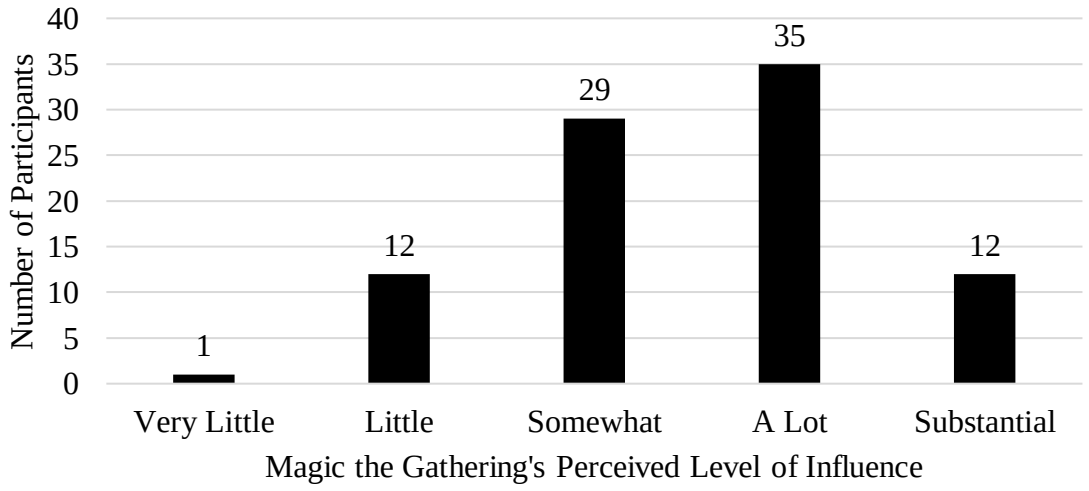

Figure 6. The perceived role of how much Magic the Gathering helped participants understand processes.

Question 23 was specific to whether or not participants perceived Magic the Gathering playing a role in increasing their retention of information. One hundred four participants answered this question: 38 (37%) responded *No* and 66 (63%) responded *Yes*. If participants answered *No* to question 23, they would then skip question 24. Due to the responses of this question, a positive analysis was made regarding the perceived role Magic the Gathering played in academic development. A determination through the analysis was made which acknowledged Magic the Gathering had a positive effect on increasing participants' retention of information.

Question 24 was specific to the perceived amount Magic the Gathering has increased participants' retention of information. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's effect on participants' retention of information. Sixty-six participants moved to question 24 by answering *Yes* to survey question 23.

One (1%) participant responded Magic the Gathering had *very little* influence on their ability to retain information. Nine (14%) participants responded Magic the Gathering had *little* influence on their ability to retain information. Twenty-nine (44%) participants responded Magic the Gathering had *somewhat* of an influence on their ability to retain information. Twenty-two (33%) participants responded Magic the Gathering had *a lot* of influence on their ability to retain information. Five (8%) participants responded Magic the Gathering had *substantial* influence on their ability to retain information. The information was then charted to assist in answering research question

two. In Figure 7, participants' perception of how Magic the Gathering influenced their ability to retain information is shown.

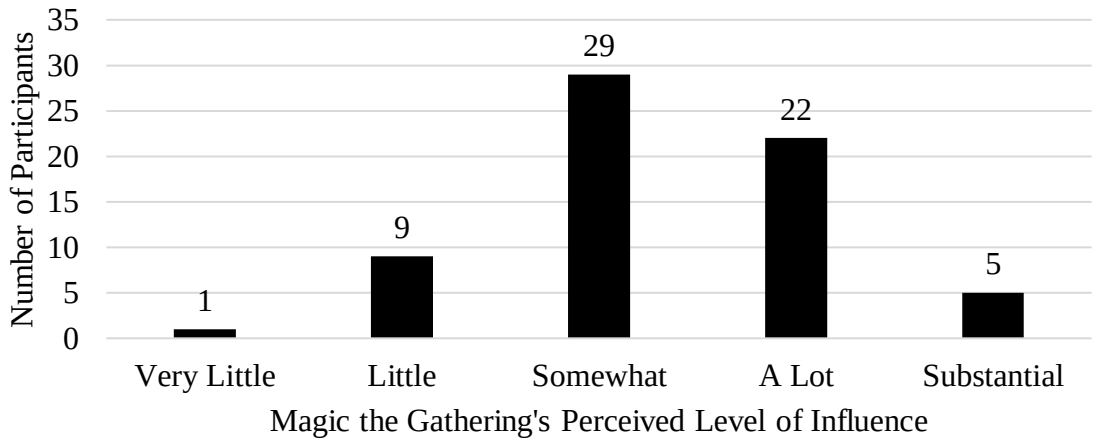

Figure 7. The perceived role of how much Magic the Gathering helped participants retain information.

Question 25 was specific to whether or not participants received support from the college or university for Magic the Gathering events. One hundred four participants answered this question: 88 (85%) responded *No* and 16 (15%) responded *Yes*. If participants answered *No* to question 25, then they skipped question 26. Due to the responses of this question, a negative analysis was made regarding the perceived role Magic the Gathering played in academic development. A determination through the analysis was made which acknowledged colleges and universities did not support Magic the Gathering events.

Question 26 was specific to the perceived amount of support participants received from higher education institutions for Magic the Gathering events. The date were

analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of support from higher education institutions for Magic the Gathering events. Sixteen participants moved to question 26 by answering *Yes* to survey question 25.

Zero (0%) participants responded they had *very little* support from higher education institutions for Magic the Gathering events. Two (13%) participants responded they had *little* support from higher education institutions for Magic the Gathering events. Seven (44%) participants responded they were *somewhat* supported by higher education institutions for Magic the Gathering events. Five (30%) participants responded they had *a lot* of support from higher education institutions for Magic the Gathering events. Two (13%) participants responded they had *substantial* support from higher education institutions for Magic the Gathering events. The information was then charted to assist in answering research question two. In Figure 8, participants' perception of how much support they received from higher education institutions for Magic the Gathering events is shown.

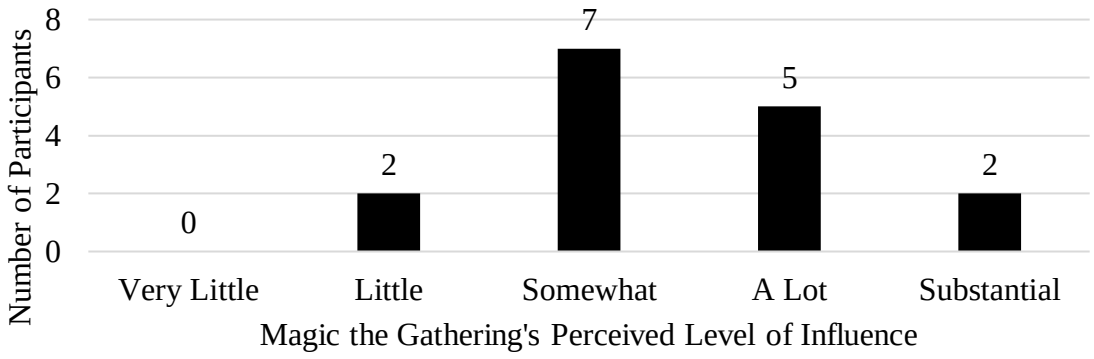

Figure 8. The perceived role of how much support Magic the Gathering received from higher education institutions.

Question 27 was specific to whether or not participants perceived Magic the Gathering playing a role in their academic development. One hundred four participants answered this question: 66 (64%) responded *No* and 38 (36%) responded *Yes*. If participants answered *No* to question 27, they would then skip question 28. Due to the responses of this question, a negative analysis was made regarding the perceived role Magic the Gathering played in academic development. A determination through the analysis was made which acknowledged Magic the Gathering had somewhat of an effect on participants' academic development.

Question 28 was specific to the perceived amount Magic the Gathering played a role in participants' academic development. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's effect on participants' academic development. Thirty-eight participants moved to question 28 by answering *Yes* to survey question 27.

One (3%) participant responded Magic the Gathering had *very little* influence on their academic development. Five (13%) participants responded Magic the Gathering had *little* influence on their academic development. Ten (26%) participants responded Magic the Gathering had *somewhat* of an influence on their academic development. Nine (24%) participants responded Magic the Gathering had *a lot* of influence on their academic development. Thirteen (34%) participants responded Magic the Gathering had *substantial* influence on their academic development. The information was then charted to assist in answering research question two. In Figure 9, participants' perception of how Magic the Gathering influenced their academic development is shown.

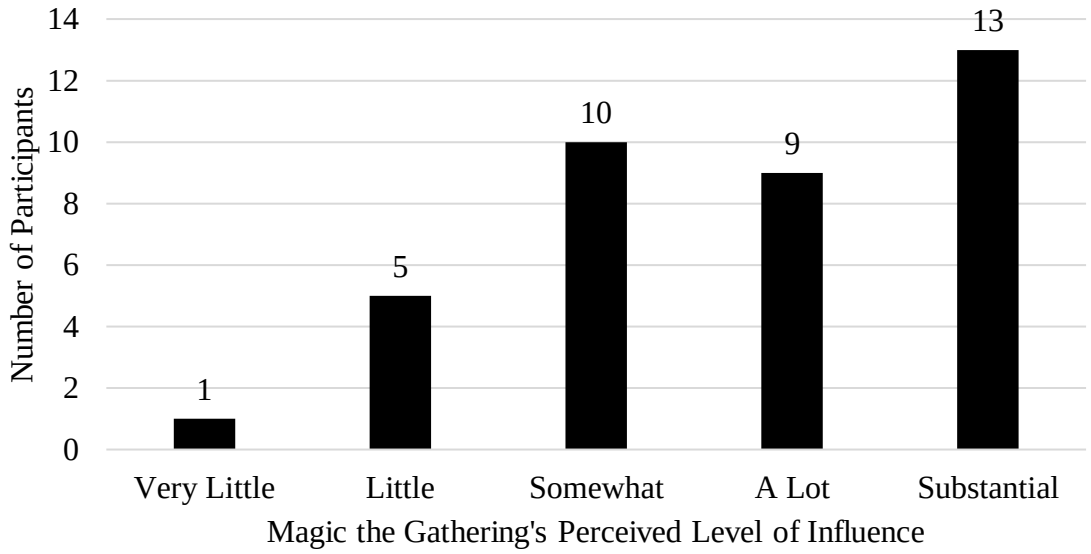

Figure 9. The perceived role of how much Magic the Gathering helped participants' academic development.

Findings from research question three. The third research question was *What role, if any, does Magic the Gathering play in career development of college-aged individuals?* The research question was analyzed by obtaining the descriptive statistics for the frequency of distribution per Likert scale in each set of questions 29-37, with the exception of question 31, of the survey questions. If participants answered *No* to any given questions, then Magic the Gathering played no role for that set in career development. However, if participants answered *Yes* to the first survey question of a set, then the survey would move on to a Likert scale question regarding the role Magic the Gathering played in career development. By using the Likert scale, participants could gauge the role Magic the Gathering played in their career development.

Question 29 was specific to whether or not participants perceived Magic the Gathering playing a role in their selection of a major. One hundred four participants

answered this question: 103 (99%) responded *No* and 1 (1%) responded *Yes*. If participants answered *No* to question 29, then would skipped question 30. Due to the responses of this question, a negative analysis was made regarding the perceived role Magic the Gathering played in career development. A determination through the analysis was made which acknowledged Magic the Gathering had almost no influence on participants' selection of their major in a higher education institution.

Question 30 was specific to the perceived amount Magic the Gathering influenced participants in selecting a major. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's role in the participants' selected major in a higher education institution. One participant moved to question 30 by answering *Yes* to survey question 29.

Zero (0%) participants responded Magic the Gathering had *very little* influence on their selection of major in college or university. Zero (0%) participants responded Magic the Gathering had *little* influence on their selection of major in college or university. One (100%) participant responded Magic the Gathering had *somewhat* of an influence on the selection of major in college or university. Zero (0%) participants responded Magic the Gathering had *a lot* of influence on their selection of major in college or university. Zero (0%) participants responded Magic the Gathering had *substantial* influence on their selection of major in college or university. The information was then charted to assist in answering research question three.

Question 32 was specific to whether or not participants perceived Magic the Gathering influencing their selection of an occupation. Ninety-one participants answered

this question: 84 (92%) responded *No* and 7 (8%) responded *Yes*. If participants answered *No* to question 32, they would then skip question 33. Due to the responses of this question, an analysis was made regarding the perceived role Magic the Gathering played in career development. A determination through the analysis was made which acknowledged Magic the Gathering had little influence on participants' selection of their chosen careers.

Question 33 was specific to the perceived amount Magic the Gathering influenced participants in selecting their occupation. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's role in the participants' selected occupation. Seven participants moved to question 33 by answering *Yes* to survey question 32.

Zero (0%) participants responded Magic the Gathering had *very little* influence on their selection of occupation. Zero (0%) participants responded Magic the Gathering had *little* influence on their selection of occupation. Three (43%) participant responded Magic the Gathering had *somewhat* of an influence on their selection of occupation. One (14%) participant responded Magic the Gathering had *a lot* of influence on the selection of occupation. Three (43%) participants responded Magic the Gathering had *substantial* influence on their selection of occupation. The information was then charted to assist in answering research question three. In Figure 10, participants' perception of how Magic the Gathering influenced their choice of occupation. The information was then charted to assist in answering research question three is shown.

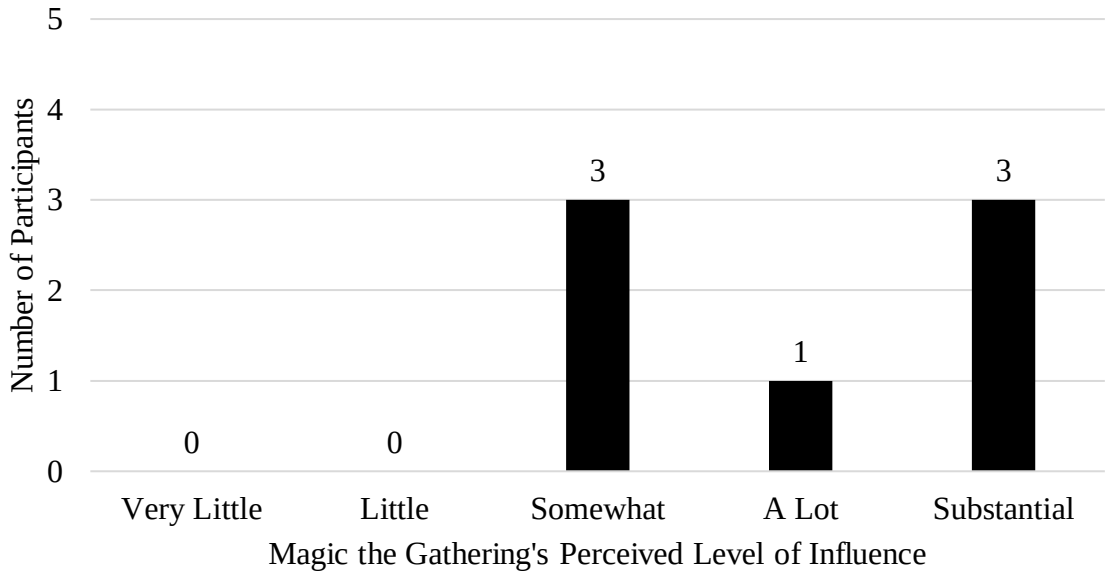

Figure 10. The perceived role of how much Magic the Gathering affected participants' occupation choice.

Question 34 was specific to whether or not participants perceived Magic the Gathering affecting their ability to retain employment. One hundred four participants answered this question: 89 (86%) responded *No* and 15 (14%) responded *Yes*. If participants answered *No* to question 34, then they skipped question 35. Due to the responses of this question, a negative analysis was made regarding the perceived role Magic the Gathering played in career development. A determination through the analysis was made which acknowledged Magic the Gathering had little effect on participants' ability to retain employment.

Question 35 was specific to the perceived amount Magic the Gathering affected participants' ability in retaining employment. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's

role in the participants' ability to retain employment. Sixteen participant moved to question 35 by answering *Yes* to survey question 34.

Three (19%) participants responded Magic the Gathering had *very little* influence on their ability to retain employment. Two (12%) participants responded Magic the Gathering had *little* influence on their ability to retain employment. Four (25%) participants responded Magic the Gathering had *somewhat* of an influence on their ability to retain employment. Four (25%) participants responded Magic the Gathering had *a lot* of influence on their ability to retain employment. Three (19%) participants responded Magic the Gathering had *substantial* influence on their ability to retain employment. The information was then charted to assist in answering research question three. In Figure 11, participants' perception of how Magic the Gathering affected their ability to retain employment is shown.

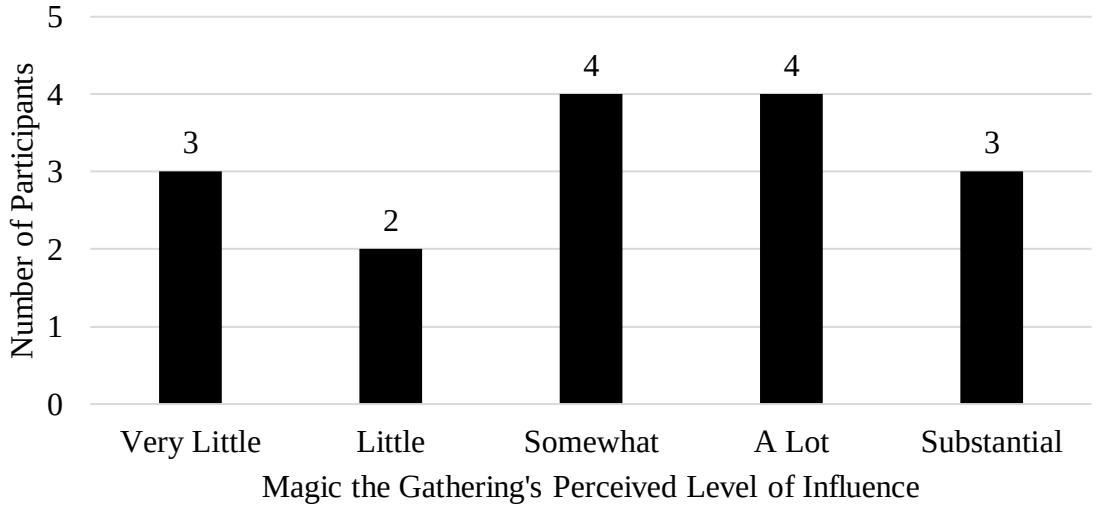

Figure 11. The perceived role of how much Magic the Gathering helped participants retain employment.

Question 36 was specific to whether or not participants perceived Magic the Gathering playing a role in their career development. One hundred four participants answered this question: 83 (80%) responded *No* and 21 (20%) responded *Yes*. If participants answered *No* to question 36, they would then skip question 37. Due to the responses of this question, a negative analysis was made regarding the perceived role Magic the Gathering played in career development. A determination through the analysis was made which acknowledged Magic the Gathering had little effect on participants' career development.

Question 37 was specific to the perceived amount Magic the Gathering played a role in participants' career development. The date were analyzed by calculating the frequency of distribution per option on the Likert scale to account for the levels between *very little* and *substantial* in regards to the perceived amount of Magic the Gathering's role in the participants' career development. Twenty-two participants moved to question 337 by answering *Yes* to survey question 36.

Three (14%) participants responded Magic the Gathering had *very little* influence on their career development. Two (9%) participants responded Magic the Gathering had *little* influence on their career development. Fourteen (63%) participants responded Magic the Gathering had *somewhat* of an influence on their career development. Three (14%) participants responded Magic the Gathering had *a lot* of influence on their career development. Zero (0%) participants responded Magic the Gathering had *substantial* influence on their career development. The information was then charted to assist in answering research question three. In Figure 12, participants' perception of how Magic the Gathering influenced their career development is shown.

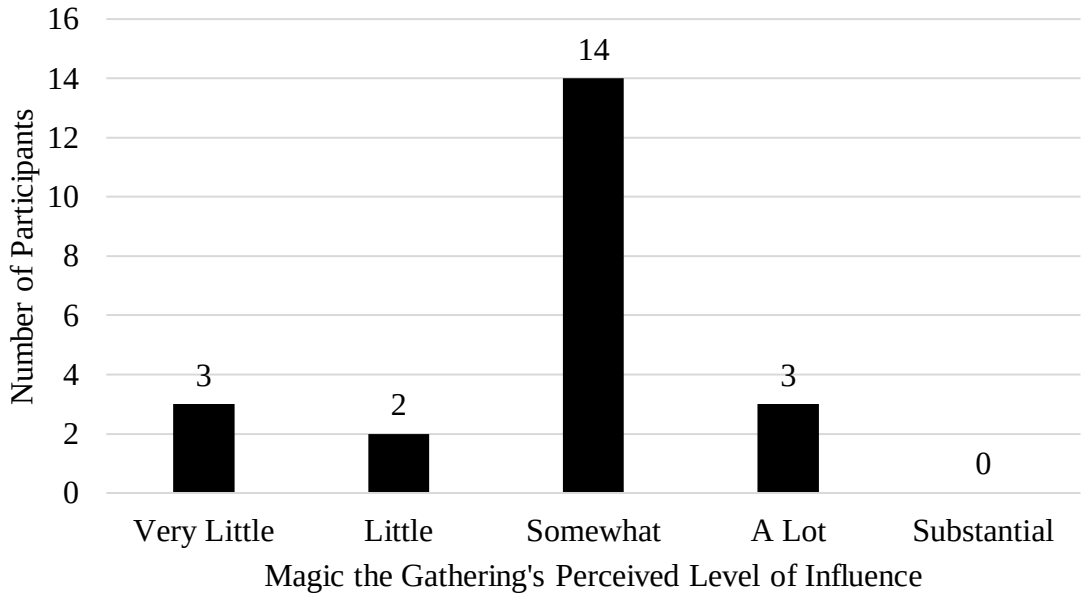

Figure 12. The perceived role of how much Magic the Gathering helped participants' career development.

Summary

In this chapter, the instrument used to gather date were thoroughly explained, and the purpose of each of the questions within the instrument were illustrated. Data collected in the study were presented by each survey question and were explained in detail. Research Question One was answered by the perception that Magic the Gathering plays somewhat of a role in the participants' whole-person development. Research Question Two was answered by the perception that Magic the Gathering plays somewhat of a role in the participants' academic development. Research Question Three was answered by the perception that Magic the Gathering plays a very little role in the participants' career development.

In Chapter Five, the findings for the research are presented. Afterwards, the conclusions for the research questions are rationalized and supported by research found in Chapter Two. Thereafter, the implications of the research is explained. Then recommendations for future research are offered. At the end of Chapter Five, a review of chapters one through five is given.

Chapter Five: Summary and Conclusions

In this study, Astin and Antonio's (2012) I-E-O Model was used as the conceptual framework to introduce Magic the Gathering, a popular trading card game created in 1993 by Richard Garfield (Wizards of the Coast, 2016d), as an extracurricular activity in higher education institutions. Previous studies have used various extracurricular activities as the input aspect of Astin and Antonio's (2012) I-E-O model with positive results (Manlove, 2013). By using Magic the Gathering as the focus of the study, colleges and universities may have one more activity to use to help connect students to their institutions for greater retention.

In this chapter, a summary of the findings explained in Chapter Four are discussed. Conclusions and implications for practice are supported by literature reviewed in Chapter Two in the section that follows. The conclusion of the chapter is reserved for recommendations for future research.

Findings

To answer the three overreaching questions used to guide the research, the MAD survey was analyzed in two steps. First, *Yes* and *No* questions were used to determine if Magic the Gathering played any role in whole-person, academic, or career development of college-aged individuals. Second, when participants answered favorably to a question a Likert scale item was presented which gauged the extent the connection between Magic the Gathering and the survey taker's whole-person, academic, and career development.

Research question one. The first research question guiding this study, *What role, if any, does Magic the Gathering play in whole-person development of college-aged individuals?*, consisted of five questions from the MAD survey focusing specifically on

the perceived role Magic the Gathering played in participants' whole-person development. According to the participants through their survey responses, Magic the Gathering in regards to whole-person development had somewhat of an influence on their personal connections to society, school, and selves. Since 41% of participants answered *Yes* to the whole-person development portion of the MAD survey, overall, less than half of the participants reported Magic the Gathering played somewhat of a role in whole-person development. If participants responded favorably about their perception of Magic the Gathering's influence on their whole-person development, they were then prompted to answer a Likert scale question to gauge how much they perceived Magic the Gathering affected their whole-person development. By distributing the responses of the participants' answers regarding Magic the Gathering's perceived influence on whole-person development, it was observed the average participant perceived Magic the Gathering to play somewhat of a role regarding whole-person development. In Figure 13, the distribution of responses regarding whole-person development was expressed.

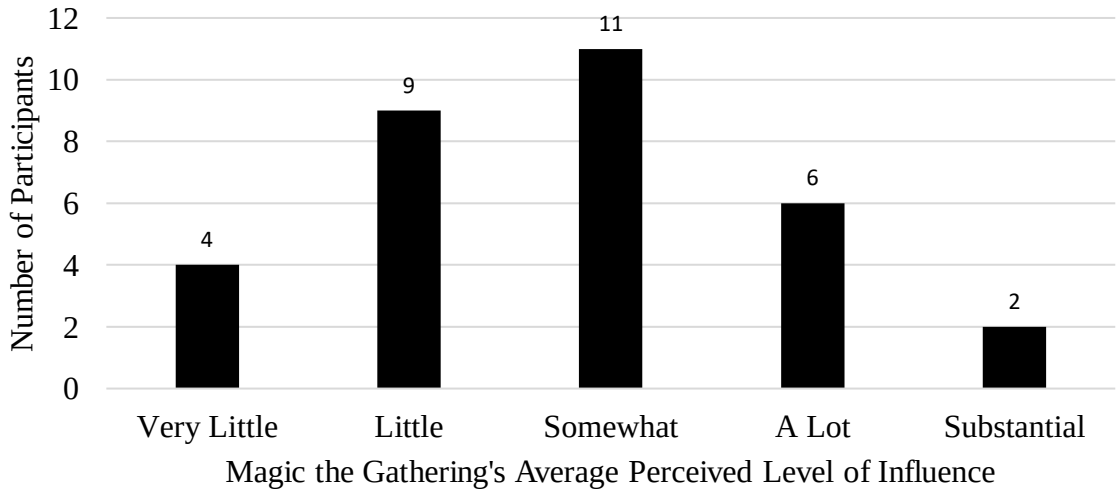

Figure 13. Distribution of responses regarding whole-person development.

Research question two. The second research question guiding this research, *What role, if any, does Magic the Gathering play in academic development of college-aged individuals?*, consisted of five questions from the MAD survey focusing specifically on the perceived role Magic the Gathering played in participants' academic development. According to the participants through their survey responses, they associated Magic the Gathering in regards to academic development had somewhat of an influence on their educational habits such as attending class, participating in school events, and graduating. Since 52% of participants answered *Yes* to the academic development portion of the MAD survey, over half of the participants reported Magic the Gathering to play somewhat of a role in their academic development. If participants responded favorably to a question regarding their perception of Magic the Gathering's perceived influence on their academic development, they were then prompted to answer a Likert scale question to gauge how much they perceived Magic the Gathering influenced their academic development. By distributing the responses of the participants' answers regarding Magic the Gathering's perceived influence on academic development, it was observed the average participant perceived Magic the Gathering to play somewhat of a role regarding academic development. In figure 14, the distribution of responses regarding academic development is expressed.

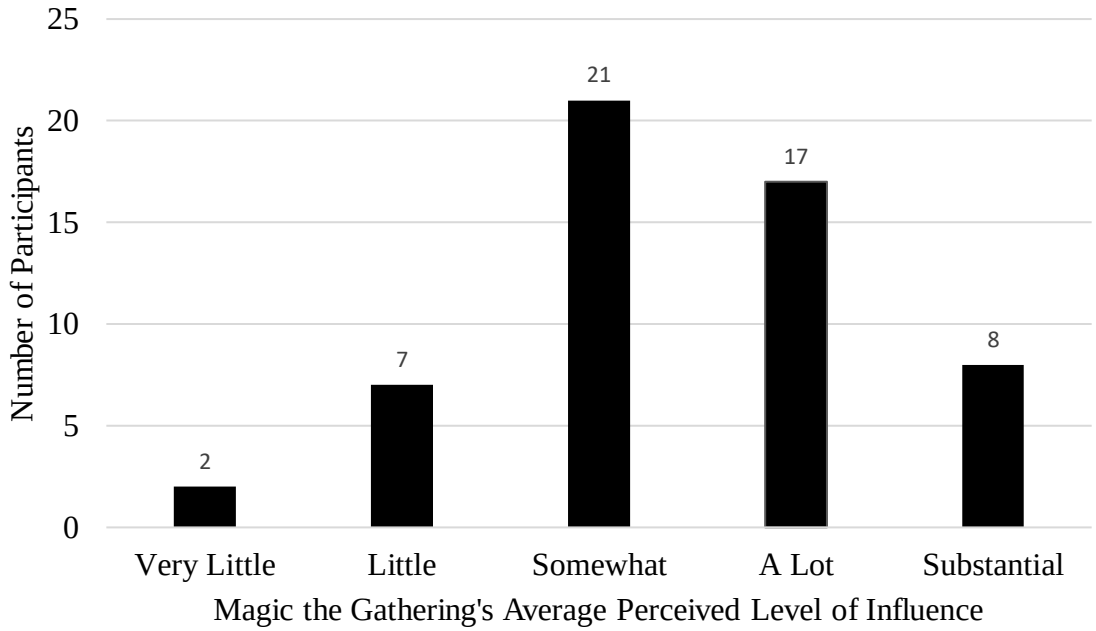

Figure 14. Distribution of responses regarding academic development.

Research question three. The third research question guiding this research, *What role, if any, does Magic the Gathering play in career development of college-aged individuals?*, consisted of four questions from the MAD survey focusing specifically on the perceived role Magic the Gathering played in participants' career development. According to the participants through their survey responses, Magic the Gathering in regards to career development had somewhat of an influence on their choice of profession, career promotions, and job performance. Since 11% of participants answered *Yes* to the career development portion of the MAD survey, less than a quarter of the participants reported Magic the Gathering to play very little of a role in their career development. If participants responded favorably about their perception of Magic the Gathering's influence on their career development, they were then prompted to answer a Likert scale question to gauge how much they perceived Magic the Gathering affected

their career development. By distributing the responses of the participants' answers regarding Magic the Gathering's perceived influence on career development, it was observed the average participant perceived Magic the Gathering to play somewhat of a role regarding career development. In figure 15, the distribution of responses regarding career development is expressed.

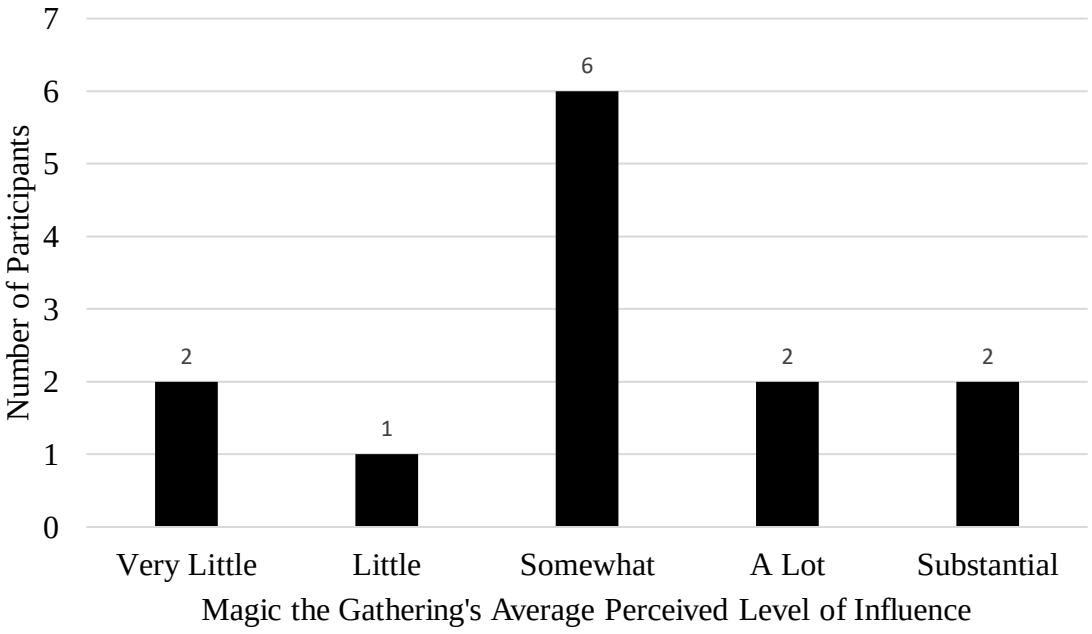

Figure 15. Distribution of responses regarding career development.

Conclusions

As previously discussed, results from this quantitative study are deemed valid due to the design of the study and the instrument that assesses the outcomes (Creswell, 2013; Fraenkel et al., 2014; Seltman, 2015). The conclusions drawn from the study are based directly from the variables associated in the study (Creswell 2013; Fraenkel et al., 2014). The data from the study produced results which could interest researchers, sociologists,

and administrators due to the association of extracurricular activities and student retention presented within the study.

Research question one. The information fashioned from research question one indicated college-aged individuals who play Magic the Gathering perceive the game to play somewhat of a role in their whole-person development. According to Marsh (2014), whole-person development occurs through cognitive and reflective practice. When people put more stock in self-actualization and become more aware of their abilities, they are often able to be more productive to society at large (Borrego & Bernhard, 2011).

Extracurricular activities have a tendency to affect whole-person development in a positive manner (Elias & Drea, 2013). Manlove (2013) proposed extracurricular activities are beneficial to whole-person development because the affect variables range from academic achievement to social development. Tinto (1987b) concurred people need to be involved socially in order to be educated successfully. Tinto (1998) also explained by taking part in extracurricular activities, people become more involved in their educational journey, thus aiding in whole-person development.

Many theorists agreed building a relationship between academics and extracurricular activities is highly important in regards to success and whole-person development (Astin & Antonio, 2012; Tinto, 1998). Bennett (2012) agreed whole-person development is a necessity in developing socially adept leaders. Therefore, extracurricular activities, such as Magic the Gathering, allow college-aged individuals the ability to form relationships, connect with peers, learn empathy, gain academic success, and develop as a whole.

Research question two. The information gathered from Research Question Two indicated college-aged individuals who play Magic the Gathering perceive the game to play somewhat of a role in their academic development. Bloomfield and Barber (2011) explained there is a positive relationship between extracurricular activities and academic development. Fredricks (2012) also acknowledged extracurricular activities and academic development share many of the same features, such as daily structure, socialization, and the opportunity to participate in tasks.

Mackay (2013) recognized how games can affect academic development by explaining games can be used to help college-aged individuals develop cognitive skills. Haber (2011) offered another effect of Magic the Gathering to academic development is college-aged students learn through peer interaction that take place during extracurricular settings. Elias and Drea (2013) explicated the inherent value of extracurricular activities is they enhance satisfactory performance in academic studies.

Researchers have used multiple frameworks, including Astin and Antonio's (2012) I-E-O model and Tinto's (1998) theory of retention, to observe extracurricular activities effect on academic development (Elias & Drea, 2013). Wilson et al. (2014) claimed extracurricular activities have been linked to positive academic outcomes and improves skills and abilities, which lead to a psychologically healthier adjustment to education environments. Therefore, extracurricular activities, including Magic the Gathering, help improve college-aged individuals' motivation, critical thinking skills, and academic development.

Research question three. The information collected from Research Question Three implied college-aged individuals who play Magic the Gathering perceive the game

to play a very little role in their career development, and the participants who perceived Magic the Gathering to have affected their career development only perceived the game to have played somewhat of a role. One identified theory of career development is each career decision made will impact future decisions (Barch, 2011). However, Henderson (2013) argued to be able to make career decisions, people must first understand the autonomy of the decision-making process.

Many theorists agree the difficulty in career development is the workforce is not stagnant, so new challenges are created for college-aged individuals who wish to enter it (Savickas, 2013). Schawbel (2013) recognized how Magic the Gathering can affect career development by acknowledging major corporations use games to increase worker morale and productivity. Many companies use the nerd image to develop their business (Kendall, 2011). The nerd image is also often associated with people who play Magic the Gathering (Butler, 2014).

Integrating extracurricular activities into the classroom is a promising approach to guide career development because these activities help students learn how to negotiate, debate, and identify problematic situations (Lapan et al., 2016). Koutromanos and Avraamidou (2014) explained how playing games like Magic the Gathering offers a variety of learning opportunities, creates hands-on experiences, promotes collaboration, and helps career development. By implementing Magic the Gathering as the input aspect of Astin and Antonio's (2012) I-E-O model, and by using higher-education institutions as the environment aspect of Astin and Antonio's (2012) I-E-O model, career development should flourish due to the range of skills given to college-aged individuals from extracurricular activities, like Magic the Gathering.

Implications for Practice

Based on the findings in this study, when Magic the Gathering is viewed as an extracurricular activity and is used as the input aspect of Astin and Antonio's (2012) I-E-O model the results indicate moderate improvements in terms of whole-person and academic development, and little improvement on career development. This conclusion is consistent with other I-E-O studies which have taken place for other extracurricular activities in higher-education institutions (Astin & Antonion, 2012; Astin & Sax, 1998: Geise & Knight, 2011; Hodge, 1995; Keller, 2011; Thurmond & Popkess-Vawter, 2003; York et al., 2015). Implementing extracurricular activities has been shown to increase student retention and performance (Elias & Drea, 2013); therefore, viewing Magic the Gathering as an extracurricular activity, and implementing the game into higher education, student retention and performance should increase.

Many studies have provided positive examples of the benefits of extracurricular activities (Bucknavage & Worrel, 2005; Elias & Drea, 2013; Manlove, 2013; Tinto, 1998). Turkay et al. (2012) provide the same benefits to college-aged individuals as are presented via other forms of extracurricular activities, including cooperation, empathy, and communication. Therefore, Magic the Gathering should be considered as a sponsored extracurricular activity by colleges and universities. By sponsoring Magic the Gathering as a higher education extracurricular activity, colleges and universities could potentially retain more students, even in moderate amounts.

Recommendations for Future Research

There are several areas of this study that could be modified or altered in future studies so as to curb the limitations and recognize the unknowns that currently exist

pertaining to the use of Magic the Gathering as an extracurricular activity. In the following section, the modifications which could be made into future studies are detailed. The discussion of the modifications are organized by systematic groupings.

Population and sample. This study's population was college-aged individuals who play Magic the Gathering and are from multiple European and North American countries; however, only 104 college-aged Magic the Gathering players participated in the study. According to Seltman (2015), having a larger sample size increases the power and validity of the study. Bluman (2011) and Fraenkel et al. (2014) agreed a larger sample size would also reduce the sample bias.

Furthermore, differences in student population were not taken into account. No distinctions were made regarding the age, gender, socio-economic status, or any other factors of the participants. Additional research to find differences in these variables may prove beneficial to this research as some theorists indicated differences may arise due to these variables (Rogers, 2016). Further research to identify differences among age, gender, and such could assist in finding greater benefits to having Magic the Gathering as a higher-education sponsored extracurricular activity.

Research design. This study was designed to give quantitative portrayal of the perceived contributions Magic the Gathering provided in regards to whole-person, academic, and career development. The Pell Institute and Pathways to College Network (2016) claimed quantitative data helps researchers and administrators understand results. Fraenkel et al. (2014) also indicated using the quantitative approach assists in removing bias from the study.

Participants were allowed to give comments in question 38 of the MAD survey. If this research was of qualitative design, the comments made would provide explanations of why participants answered questions the way they did. By using a qualitative design, researchers would be able to explain the reasoning behind selections of survey questions by participants (Hill, 2011). Furthermore, Madrigal and McClain (2012) argued qualitative statistics would describe the characteristics of the study that could not be so easily reduced to numbers. Madrigal and McClain (2012) further explained qualitative research can provide details about human behavior, emotion, and personal characteristics that quantitative studies cannot produce.

Instrument. The instrument consisted of 38 questions which included 14 yes and no questions regarding the questions that guided the research, 14 Likert scale questions regarding the questions that guided the research, nine questions that guide the demographic information of the participants, and one comment section. However, Rogers (2016) explained having more questions would assist in a more in-depth survey. Furthermore, Creswell (2013) mentioned other options for surveys were available and could potentially be used to analyze data.

Summary

Alderman (2015) presented evidence showing games such as Magic the Gathering contributed to the whole-person, academic, and career development of college-aged individuals. Extracurricular activities affects whole-person development by creating a culture that provides college-aged individuals an environment where they can socialize with peers, reflect on their selves, and take part in societal norms (Alderman, 2015). However, a problem was found in that many higher-education institutions do not sponsor

Magic the Gathering as a collegiate extracurricular activity; thereby, they are possibly eliminating the opportunity of an all-inclusive collegiate environment.

To learn more about the problem, Astin and Antonio's (2012) I-E-O model was engaged as the conceptual framework for college-aged individuals' perception of Magic the Gathering's role in their whole-person, academic, and career development. The purpose of the study was to employ Magic the Gathering as the input aspect; higher-education institutions as the environment aspect; and whole-person, academic, and career development as the outcome aspect. Quantitative date were gathered regarding college-aged individuals' perception of Magic the Gathering's role in whole-person, academic, career development in order to justify having Magic the Gathering be a sponsored extracurricular activity at higher-education institutions.

The study was quantitative in nature because Fraenkel et al. (2014) stated quantitative approaches dismiss biases and opinions, which have no place in the research. Creswell (2013) added quantitative research would allow a broader perspective of the issue, which would help introduce more research. Furthermore, descriptive statistics were used to present the data in an understandable fashion so it could be more readily interpreted (Lund & Lund, 2013).

Christensen et al. (2014) agreed descriptive statistics are appropriate for studies where the data needs to be meaningfully described. Since this study is the first of its kind, Madrigal and McClain (2012) argued descriptive statistics could be gained by using a few figures. For this type of study, Creswell (2013) stated a survey would be an appropriate instrument for the research.

The MAD survey was created via SurveyMonkey. The survey consists of 38 questions, which were dissected to answer each of the questions that guided the research. The target population of the survey were college-aged individuals from North America and Europe who played Magic the Gathering. All valid surveys received were used in the study for a total of 104 results.

After an in-depth analysis, quantitative methods and descriptive statistics (Creswell, 2013; Fraenkel et al. 2014) were used to determine college-aged individuals perceived Magic the Gathering plays somewhat of a role in their whole-person development. Furthermore, by analyzing the data gathered, it was found college-aged individuals perceived Magic the Gathering plays somewhat of a role in their academic development. Lastly, according to the data garnered through the survey, college-aged individuals perceived Magic the Gathering played very little of a role in their career development. Therefore, by sponsoring Magic the Gathering as a collegiate extracurricular activity, higher-education institutions have more of an opportunity to obtain an all-inclusive environment that excels in retention and assists in individuals' whole-person, academic, and career development.

Appendix A

Magic the Gathering and Development

Survey can be found at https://www.surveymonkey.com/r/Magic the Gathering-and-Development

1. Are you 18 years of age or older?
    - Yes
    - No

2. *Higher Education Perspectives: The Role Magic the Gathering Plays in Whole-Person, Academic, and Career Development*

    Principal Investigator Bob E. Lynch

    Telephone: [redacted] E-mail: [redacted]

    1. You are invited to participate in a research study conducted by Bob Lynch under the guidance of Dr. Vivian Elder. The purpose of this research is to gather quantitative information regarding students' perception of the role Magic the Gathering has played in their whole-person, academic, and career development by employing Astin and Antonio's (2012) Input-Environment-Outcome (I-E-O) model. For the purpose of this study, participating in Magic the Gathering events is the input; college and/or university is the environment; and whole-person, academic, and career development is the outcome.

    2. a) Your participation will involve filling in this survey.

    b) The amount of time involved in your participation will be 5 to 10 minutes.

    Approximately 50-75 college-aged Magic the Gathering players will be involved in this research.

    3. There are no anticipated risks associated with this research.

    4. There are no direct benefits for you participating in this study. However, this research may lead schools to sponsor Magic the Gathering as a collegiate activity which could further lead to an all-inclusive environment.

    5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw. The PI will not bribe or reward participants willing to take the survey, and all participants will take the survey of their own free will.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a safe location.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Bob Lynch at [redacted] or the Supervising Faculty, Dr. Vivian Elder at [redacted]. You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Marilyn Abbott, Interim Provost at [redacted] or [redacted].

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records if I so choose. By selecting *Accept*, I consent to my participation in the research described above.

- o Accept
- o Decline

3. How old are you?

- o 18 - 22
- o 23 - 27
- o 28 - 32
- o 33 +

4. How long have you played Magic the Gathering?

- o 0 - 12 Months
- o 1 - 5 Years
- o 6 - 10 Years
- o 11 - 15 Years
- o 16 - 20 Years
- o 20 + Years

5. On average, how many days per week do you play Magic the Gathering?

- o 1
- o 2
- o 3
- o 4
- o 5
- o 6
- o 7

6. Are you currently enrolled in college or university, or have you attended or graduated college or university with any degree within the last 12 months?

    - Yes
    - No

7. What is your current level in college or university?

    - Freshman (1st Year)
    - Sophomore (2nd Year)
    - Junior (3rd Year)
    - Senior (4th Year)
    - Graduated with Undergraduate Degree
    - Seeking Graduate Degree
    - Graduated with Graduate Degree

8. Did you drop out of college or university?

    - Yes
    - No

9. Do you feel Magic the Gathering played a role in your decision to drop out of college or university?

    - Yes
    - No

10. How much of a role did Magic the Gathering have on your decision to drop out of college or university?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

11. Did Magic the Gathering play a role in how much you participated in campus events?

    - Yes
    - No

12. How much influence did Magic the Gathering have on your participation in campus events?

- Very Little
- Little
- Somewhat
- A Lot
- Substantial

13. Do you fell that playing Magic the Gathering has played a role in your whole-person development?

    - Yes
    - No

14. How much does Magic the Gathering define you as a person?

    - Very Little - Most people don't know I play Magic the Gathering. It does not define me.
    - Little - I play Magic the Gathering enough that people know, but I have other hobbies that interest me as much.
    - Somewhat - When most people think of what to get me for gifts, Magic the Gathering is often the first thing that comes to mind.
    - A Lot - I spend the majority of my free time playing Magic the Gathering.
    - Substantial - I make my living by playing Magic the Gathering.

15. Did Magic the Gathering play a role in how much you participated in class (i.e. active listening, note taking, class discussion)?

    - Yes
    - No

16. How much influence did Magic the Gathering have on your participation in class?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

17. Did you ever skip class to play Magic the Gathering?

    - Yes

- No

18. How often would you skip class each semester to play Magic the Gathering?

    - 1 - 2 Times
    - 3 - 4 Times
    - 5 - 6 Times
    - 7 - 8 Times
    - 9 + Times

19. Do you feel that playing Magic the Gathering has helped your reading ability?

    - Yes
    - No

20. How much has Magic the Gathering helped your reading ability?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

21. Do you feel that Magic the Gathering has assisted in your ability to understand processes (i.e. instructions, directions, operations)?

    - Yes
    - No

22. How much has Magic the Gathering assisted in your ability to understand processes?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

23. Do you feel that Magic the Gathering has increased your retention of information outside the game?

    - Yes
    - No

24. How much has Magic the Gathering increased your ability to retain information outside the game?

- Very Little
- Little
- Somewhat
- A Lot
- Substantial

25. Do you receive support for Magic the Gathering events from faculty or administration at your college or university?

    - Yes
    - No

26. How much support do you receive for Magic the Gathering events from faculty or administration at your college or university?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

27. Do you feel that Magic the Gathering has played a role in your academic development?

    - Yes
    - No

28. How much of a role do you feel Magic the Gathering has played in your academic development?

    - Very Little - Playing Magic the Gathering did not encourage much, if any, support in the way of academic achievement.

    - Little - Playing Magic the Gathering helped me gain a greater vocabulary, become a stronger reader, and better find patterns in other aspects of my education.

    - Somewhat - Playing Magic the Gathering has given me a network of friends with whom I identify my college or university.

    - A Lot - Playing Magic the Gathering taught me to think outside the box.

- Substantial - Playing Magic the Gathering helped me learn how to solve problems in multiple ways, better retain information, use tact, negotiate, and a plethora of other academic benefits.

29. Do you feel playing Magic the Gathering led you to select your major in college or university?

    - Yes
    - No

30. How much influence did Magic the Gathering have in selecting your major?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

31. Are you currently employed?

    - Yes
    - No

32. Do you feel playing Magic the Gathering influenced your decision to select your current occupation?

    - Yes
    - No

33. How much has Magic the Gathering affected your current occupation?

    - Very Little
    - Little
    - Somewhat
    - A Lot
    - Substantial

34. Do you feel playing Magic the Gathering has affected your ability to get or retain employment?

    - Yes
    - No

35. How much does playing Magic the Gathering affect your ability to get or retain employment?

- Very Little
- Little
- Somewhat
- A Lot
- Substantial

36. Do you feel that Magic the Gathering has played a role in your career development?

    - Yes
    - No

37. How much does Magic the Gathering affect your ideal career?

    - Very Little - I only play Magic the Gathering as a hobby and do not fit it into my professional agenda.
    - Little - Magic the Gathering taught me the organizational skills that are prudent in today's workplace.
    - Somewhat - Magic the Gathering strengthened my ability to negotiate and communicate, and I use that ability in my job now.
    - A Lot - I enjoy trading, buying, and selling Magic the Gathering cards, which led me to my career of trading, buying, or selling other goods.
    - Substantial - I either am trying to make or have made Magic the Gathering my professional life.

38. Comments:

Appendix B

Lindenwood Informed Consent Form: Adult

Higher Education Perspectives: The Role Magic the Gathering's Plays in Whole-Person, Academic, and Career Development

Principal Investigator Bob E. Lynch

Telephone: [redacted] E-mail: [redacted]

1. You are invited to participate in a research study conducted by Bob Lynch under the guidance of Dr. Vivian Elder. The purpose of this research is to gather quantitative information regarding students' perception of the role Magic the Gathering has on their whole-person, academic, and career development by employing Astin's Input-Environment-Outcome (I-E-O) model (1993). For the purpose of this study, participating in Magic the Gathering events is the input; college and/or university is the environment; and whole-person, academic, and career development is the outcome.

2. a) Your participation will involve filling in this survey.

b) The amount of time involved in your participation will be 5 to 10 minutes.

Approximately 50-75 college-age Magic the Gathering players will be involved in this research.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, this research may lead schools to sponsor Magic as a collegiate activity which could further lead to an all-inclusive environment.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw. The PI will not bribe or reward participants willing to take the survey, and all participants will take the survey of their own free will.

6. We will do everything we can to protect your privacy. As part of this effort,

your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a safe location.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Bob Lynch at [redacted] or the Supervising Faculty, Dr. Vivian Elder at [redacted]. You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Marilyn Abbott, Provost, at mabbott@lindenwood.edu or 636-949-4912.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records if I so choose. By selecting *Accept*, I consent to my participation in the research described above.

- o Accept
- o Decline

Appendix C

Lindenwood Institutional Review Board Permission to Conduct Research

LINDENWOOD

LINDENWOOD UNIVERSITY ST. CHARLES, MISSOURI

DATE:	May 31, 2016
TO:	Bob Lynch
FROM:	Lindenwood University Institutional Review Board
STUDY TITLE:	[896260-1] Higher Education Perspectives: The Role Magic the Gathering Plays in Whole-Person, Academic, and Career Development
IRB REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION: **APPROVED**	
APPROVAL DATE:	
EXPIRATION DATE: REVIEW TYPE:	

Thank you for your submission of New Project materials for this research project. Lindenwood University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting

requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to the IRB.

Please note that all research records must be retained for a minimum of three years.

If you have any questions, please contact Sherrie Wisdom at (636) 949-4478 or swisdom@lindenwood.edu. Please include your study title and reference number in all correspondence with this office.

If you have any questions, please send them to IRB@lindenwood.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Lindenwood University Institutional Review Board's records.

Appendix D

Wizards of the Coast Letter of Approval

Hello Bob,

Thank you for contacting Wizards of the Coast regarding the usage of our intellectual property. I have reviewed your request with the appropriate people and we have no objection to your using the property in question as described in your request under the condition that the use is noncommercial and that the property is not used in an obscene manner.

Matthew H.
Online Response Crew
Wizards of the Coast

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Product: Magic: The Gathering

Type of Request: Personal Use

Magic: The Gathering App?: No

References

Achieving the Dream. (2016). *Focus areas: college readiness.* Retrieved from http://achievingthedream.org/focus-areas/college-readiness

Alderman, N. (2015). Playing video games doesn't make you a better person. But that's not the point. *The Guardian*. Retrieved from http://www.theguardian.com/technology/2015/nov/06/video-games-give-you-unique-experience

American Psychological Association. (2009). *Publication Manual of the American Psychological Association* (6th ed.). New York, NY: Author.

Arlt, J. (2011). *Exploring the social world of Magic: the Gathering* (Master's thesis). Retrieved from https://scholarly.cmich.edu/cgi-bin/cmuscholarly?a=d&d=CMUGR2011-85.1.5

Ashley, M. (2011). World Records. In *Wizards of the Coast*. Retrieved from http://magic.wizards.com/en/articles/archive/arcana/world-records-2011-09-14

Astin, A. W. (1984). Student involvement: A development theory for higher education. *Journal of College Student Development*, *40*, 518-529. Retrieved from https://www.researchgate.net/publication/220017441_Student_Involvement_A_Development_Theory_for_Higher_Education

Astin, A. W., & Antonio, A. L. (2012). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education* (2nd ed.). Lanham, MD: Roman & Littlefield Publishers, Inc.

Astin, A. W., & Sax, L. J. (1998). How undergraduates are affected by service participation. *Journal of College Student Development, 39*(3), 251-263.

Bakoban, R. A., & Aljarallah, S. A. (2015). Extracurricular activities and their effect on

the student's grade point average: Statistical study. *Educational Research and Reviews*, *10*(20), 2737-2744. doi:10.5897/ERR2015.2436

Banerjee, A., & Chaudhury, S. (2010). Statistics without tears: Populations and samples. *Industrial Psychiatry Journal*, *19*(1), 60–65. doi:10.4103/ 0972-6748.77642

Barch, J. L. (2011). *Comparison of the level of career development between beginning, practicum, and graduating counselor education students* (Doctoral dissertation). Retrieved from PQDT Open. (9781124749259)

Barge, S., & Gehlbach, H. (2011). Using the theory of satisficing to evaluate the quality of survey data. *Research in Higher Education*, *53*(2), 182–200. doi:10.1007/s 11162-011-9251-2

Bartkus, K. R., Nemelka, B., Nemelka, M., & Gardner, P. (2012). Clarifying the meaning of extracurricular activity: A literature review of definitions. *American Journal of Business Education*, *5*(6), 693-704. Retrieved from http://files.eric.ed.gov/fulltext/ EJ1056363.pdf

Bednarek, M. (2012). Constructing "nerdiness:" Characterisation in The Big Bang Theory. *Multilingua*, *31*, 199-229. doi:10.1515/multi-2012-0010

Beltramini, E. [Interview with Alexander Astin]. (2012). *The Bulletin*, *80*(4). Retrieved from https://www.acui.org/Publications/The_Bulletin/2012/2012-07/18393/

Bennett, C. C. (2012). *The role of the body in leading and learning: A case study of a somatic leadership development program* (Doctoral dissertation). Retrieved from PQDT Open. (3508571).

Benokraitis, N. V. (2016). *SOC introduction to sociology* (4th ed.). Belmont, CA:

Cengage Learning.

Berger, J. B., Ramirez, E. B., & Lyons, S. (2012). Past to present: A historical look at retention. In A. Seidman (Ed.), *College student retention* (pp. 7-34). Lanham, MD: Rowman & Littlefield.

Berkeley University of California. (2016). Concepts & definitions. In *Berkeley Human Resources*. Retrieved from http://hr.berkeley.edu/hr-network/central-guide-managing-hr/managing-hr/managing-successfully/development/concepts

Bishop, J., Bishop, M., Gelbwasser, L., Green, S., Peterson, E., Rubinsztaj, A., & Zuckerman, A. (2004). Why we harass nerds and freaks: A formal theory of student culture and norms. *Journal of School Health, 74*(7), 235-251. doi:10.1111/j.1746-1561.2004.tb08280.x

Blair, J., Czaja, R. F., & Blair, E. A. (2014). *Designing surveys: A guide to decisions and Procedures* (3rd ed.). Los Angeles, CA: Sage Publications.

Bloomfield, C., & Barber, B. (2011). Developmental experiences during extracurricular activities and Australian adolescents' self-concept: Particularly important for youth from disadvantaged schools. *Journal of Youth and Adolescence, 40*(5), 582-594. doi:10.1007/s10964-01109563-0

Bluman, A. G. (2011). *Elementary statistics: A step by step approach* (8th ed.). Columbus, OH: McGraw-Hill.

Borrego, M., & Bernhard, J. (2011). The emergence of engineering education research as an internationally connected field of inquiry. *Journal of Engineering Education, 100*(1), 14-47.

Branch, T. (2011). The shame of college sports. *The Atlantic*. Retrieved from http://

www.theatlantic.com/magazine/archive/2011/10/the-shame-of-college-sports/308643/

Broh, B. (2002). Linking extracurricular programming to academic achievement: Who benefits and why? American Sociological Association. *Sociology of Education, 75*(1), 69-95. doi:10.2307/3090254

Bucknavage, L. B., & Worrell, F. C. (2005). A study of academically talented students' participation in extracurricular activities. *Journal of Secondary Gifted Education, 16*(2-3), 74-86. Retrieved from http://files.eric.ed.gov/fulltext/EJ698314.pdf

Busse, K. (2013). Geek hierarchies, boundary policing, and the gendering of the good fan. *Participations: Journal of Audience & Reception Studies, 10*(1), 73-91. Retrieved from http://participations.org/Volume%2010/Issue%201/6%20Busse%2010.1.pdf

Butler, B. (2014). An interview with Richard Garfield, creator of Magic the Gathering: The Gathering. In *Vice Media*. Retrieved from http://www.vice.com/read/an-interview-with-richard-garfield-creator-of-Magic the Gathering-the-gathering

Carnegie Mellon University. (2016). Academic development. In *Academic Development*. Retrieved from http://www.cmu.edu/acadev/index.html

Christensen, L. B., Johnson, R. B., & Turner, L. A. (2014). *Research methods, design, and analysis* (12th ed.). Boston, MA: Pearson.

Cowling, P. I., Ward, C. D., & Powley, E. J. (2012). Ensemble determinization in Monte Carlo Tree Search for the imperfect information card game Magic: The Gathering. *IEEE Transactions on Computational Intelligence and AI in Games, 4*(4), 241-257. doi:10.1109/TCIAIG.2012.2204883

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.). New York, NY: Sage.

DeLea, D. R. (2012). *Nerdy women to jest and to swear: An ethnographic study of group hierarchy and humor* (Master's thesis). Retrieved from PQDT Open. (1511346).

Darling, N., Caldwell, L. L., & Smith, R. (2005). Participation in school-based extracurricular activities and adolescent adjustment. *Journal of Leisure Research, 37*, 51-76. Retrieved from http://plaza.ufl.edu/asarkees/PSY%203220/ECsSelf Esteem/4-%20Darling.pdf

Demetriou, C., & Schmitz-Sciborski, A. (2011). Integration, motivation, strengths and optimism: Retention theories past, present and future. *Proceedings of the 7th National Symposium on Student Retention*, 300-312. Retrieved from https://studentsuccess.unc.edu/files/2012/11/Demetriou-and-Schmitz-Sciborski.pdf

Diaz, J. R. (2013). Geek culture is a safe place for diversity. *The Sundial*. Retrieved from http://sundial.csun.edu/2013/11/geek-culture-is-a-safe-space-for-diversity/

Doyle, T. (2011). *Learner-centered teaching: Putting the research on learning into practice.* Sterling, VA: Stylus Publishing, LLC.

Duke, R. (2014). What is Magic the Gathering?. In *Wizards of the Coast*. Retrieved from http://Magic the Gathering.wizards.com/en/articles/archive/lo/what-Magic-2014-08-11

Elias, K., & Drea, C. (2013). The co-curricular record: Enhancing a postsecondary education. *College Quarterly, 16*(1). Retrieved from http://files.eric.ed.gov/fulltext/EJ1016461.pdf

Elzen, A. M. V. & Roush, J. (2013). Brawling in the library: Gaming programs for impactful outreach and instruction at an academic library. *Library Trends 61*(4), 802-813. Retrieved from http://lux.lawrence.edu/cgi/viewcontent.cgi?article=1002&context=lib_pp

English, F. W. (Ed.). (2006). *Encyclopedia of educational leadership and administration* (Vols. A - K). London, England: Sage Publications.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2014). How to design and evaluate research in education. (9th ed.). New York, NY: McGraw-Hill.

Fredricks, J. (2012). Extracurricular participation and academic outcomes: Testing the over-scheduling hypothesis. *Journal of Youth and Adolescence, 41*(3), 295-306. doi:101007/s10964-011-9704-0

Fryrear, A. (2015). How to get more responses by posting your survey on social media. In *SurveyGizmo*. Retrieved from https://www.surveygizmo.com/survey-blog/facebook-twitter-survey-responses/

Garfield, R. (2013). The creation of Magic: The Gathering. In *Wizards of the Coast*. Retrieved from http://Magic.wizards.com/go/magazine/article.aspx?x=mtg/daily/feature/238b

Geise, M. J., & Knight, W. E. (2011). A longitudinal analysis of outcomes associated with Ohio's postsecondary enrollment options program. *Association for Institutional Research*, 1-34. Retrieved from http://files.eric.ed.gov/fulltext/ED531714.pdf

Gordon, E. (2013). “A brief history of nerds in pop culture.” *Videogum*. Retrieved from http://www.videogum.com/661721/a-history-of-nerds-in-pop-culture5/topstories/.

Haber, P. (2011). Peer education in student leadership programs: Responding to co-curricular challenges. *New Directions for Student Services, 133,* 65-76. Retrieved from http://eds.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=c9b59a76-888d-4bba-8e1f-67acdef74569%40sessionmgr120&vid=2&hid=111

Hammer, C. S. (2011). The importance of participant demographics. *American Journal of Speech-Language Pathology*, *20*(261), 261. doi:10.1044/1058-0360(2011/ed-04)

Hardwick, C. (2011). *The Nerdist Way: How to Reach the Next Level (In Real Life)*. (pp. i-xvii). New York: Penguin.

Harrison, J. (2013). Why do we have activity programs in schools? *High School Today, 6*(6), 30-31. Retrieved from http://www.nfhs.org/uploadedfiles/3dissue/HSToday/2013issues/march2013/index.html

Hau, R., Plotkin, E., & Tran, H. (2012). *Magic the Gathering: The gathering deck performance prediction.* Retrieved from http://cs229.stanford.edu/proj2012/HauPlotkinTranMagicTheGatheringDeckPerformancePrediction.pdf

Heaney, A., & Fisher, R. (2011). Supporting conditionally-admitted students: A case study of assessing persistence in a learning community. *Journal of The Scholarship Of Teaching And Learning*, *11*(1), 62-78.

Henderson, R. N. (2013). *The student-athlete college experience and its impact on their career development* (Doctoral dissertation). Retrieved from PQDT Open. (1527322).

Henking, S. (2013). Are you college-age? *Huffington Post*. Retrieved from http://www.huffingtonpost.com/susan-henking/are-you-collegeage_b_2832229.html

Hill, C. E. (2011). *Consensual qualitative research: A practical resource for*

investigating social science phenomena. Washington, DC: American Psychological Association.

Hodge, K. (1995). *Input and environmental variable influencing community college student satisfaction with tech prep programs in Texas* (Doctoral dissertation). Retrieved from Texas Tech University DSpace. (2346/16769)

Hong Kong Baptist University (2016). Whole-person development enhances the capacity to nourish graduate attributes. In *Office of Student Affairs*. Retrieved from http://sa.hkbu.edu.hk/home/about-sa/whole-person-development-enhances-the-capacity-to-nourish-graduate/

Hossler, D. (1984). *Enrollment management: An integrated approach*. New York, NY: College Board Publications.

Howard, B. (2011). Education funding crisis affects activity programs. *High School Today, 4*(8), 10-12. Retrieved from http://www.nfhs.org/resources/high-school-today/high-school-today-monthly-view/

Jenkins, D. (2011). *Redesigning community colleges for completion: Lessons from research on high performance organizations*. Retrieved from http://ccrc.tc.columbia.edu/Publication.asp?UID=844

Kaplan International Colleges. (2014). *12 years a student: Studying in the US and UK*. Retrieved from https://www.kic.org.uk/pathways/blog/12-years-a-student-american-british-education/

Keller, D. A. (2011). *An integrated model of early community college student success: Understanding success in developmental mathematics* (Doctoral dissertation). Retrieved from Iowa Research Online. http://ir.uiowa.edu/etd/996/

Kelly, P., & Strawn, J. (2011). *Not just kid stuff anymore: The economic imperative for more adults to complete college*. Retrieved from http://www.clasp.org/resources-andpublications/files/NotKidStuffAnymoreAdultStudentProfile-1.pdf

Kendall, L. (2011). 'White and Nerdy': Computers, race, and the nerd stereotype. *Journal of Popular Culture*, *44*(3), 505-524. doi:10.1111/j.1540-5931.2011.00846.x

Kneese, T. (2014). QR codes for the dead. *The Atlantic*. Retrieved from http://www.theatlantic.com/technology/archive/2014/05/qr-codes-for-the-dead/370901/

Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development* (8th ed.). New York, NY: Routledge.

Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2000). Experiential learning theory: Previous research and new directions. *Perspectives on Cognitive, Learning, and Thinking Styles*. Retrieved from https://www.d.umn.edu/~kgilbert/educ5165-731/Readings/experiential-learning-theory.pdf

Kolb, A. Y., & Kolb, D. A. (2008). Experiential learning theory: A dynamic, holistic approach to management learning, education and development. *Handbook of Management Learning, Education, and Development*. Retrieved from https://weatherhead.case.edu/departments/organizational-behavior/workingPapers/WP-07-02.pdf

Koutromanos, G., & Avraamidou, L. (2014). The use of mobile games in formal and informal learning environments: A review of the literature. *Educational Media International*, 51(1), 49-65.

Kronholz, J. (2012). Academic value of non-academics. *The Education Digest*, *12*(1), 4-10.

Lapacek-Trout, N. L. (2014). *"Cool buzzword" or "social failure"? Examining the nerd on television* (Master's Thesis). Retrieved from PQDT Open. (1560764).

Lapan, R. T., Marcotte, A. M., Storey, R., Carbone, P., Loehr-Lapan, S., Guerin, D., Thomas, T., Cuffee-Grey, D., Coburn, A., Pfeiffer, T., Wilson, L., & Mahoney, S. (2016). Infusing career development to strengthen middle school English language arts curricula. *Career Development Quarterly*, *64*(2), 126-139. doi:10.1002/cdq.12046

Light, R. J., Singer, J. D., & Willett, J. B. (1990). *By design: Planning research on higher education*. Cambridge, MA: Harvard University Press.

Limbert, T. J. (2012). *The Magic the Gathering of community: Gathering of card players and subcultural expression* (Master's thesis). Retrieved from https://etd.ohiolink.edu/!etd.send_file?accession=bgsu1342464535&disposition=inline%20masters

Lindenwood University. (2016). Application for IRB review. Retrieved from http://www.lindenwood.edu/academics/irb/forms.html

Lowenthal, Y. (2011). Geek identity crisis. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/yuri-lowenthal/geek-identity-crisis_b_984045.html

Lucas, M. (2012). Athletics, fine arts hurt by educational reform. *High School Today*, *5*(4), 22-23.

Luczyk, S. G. (2012). *Achieving the dream: An assessment of participant institutions' performance using the integrated postsecondary education data system (IPEDS)* (Doctoral dissertation). Retrieved from http://diginole.lib.fsu.edu/islandora/

object/fsu:182988/datastream/PDF/view

Lund, A., & Lund, M. (2013). *Descriptive and inferential statistics*. Retrieved from https://statistics.laerd.com/statistical-guides/descriptive-inferential-statistics.php

Mackay, R. F. (2013). Playing to learn: Panelists at Stanford discussion say using games as an educational tool provides opportunities for deeper learning. *Stanford Report*. Retrieved from http://news.stanford.edu/news/2013/march/games-education-tool-030113.html

Madrigal, D., & McClain, B. (2012). *Strengths and weaknesses of quantitative and qualitative research*. Retrieved from http://www.uxmatters.com/mt/archives/2012/09/strengths-and-weaknesses-of-quantitative-and-qualitative-research.php

Mahoney, J. (2014). School extracurricular activity participation and early school dropout: A mixed-method study of the role of peer social networks. *Journal of Educational and Developmental Psychology*, *4*(1), 143-154. doi:10.5539/jedp.v4n1p143

Manley Lima, M. C. (2014). *Commuter students' social integration: The relationship between involvement in extracurricular activities and sense of belonging* (Doctoral dissertation). Retrieved from PQDT Open. (3617177).

Manlove, K. J. (2013). *The impact of extracurricular athletic activities on academic achievement, disciplinary referrals, and school attendance among hispanic female 11th grade students* (Doctoral dissertation). Retrieved from TAMUCC DSpace. http://hdl.handle.net/1969.6/514

Marsh, C. (2014). "Learning outcome" as a theological concept. *Journal of Adult Theological Education, 11*(2). doi:10.1179/1740714114Z.00000000025

Marsh, H. W., & Kleitman, S. (2002). Extracurricular activities: The good, the bad, and the nonlinear. *Harvard Educational Review, 72*(4), 464.

Martin, C. J. (2015). *Student involvement in extracurricular activities and post-secondary education placement* (Doctoral dissertation). Retrieved from PQDT Open. (10030342).

Mok, D. S. (2013). *The impact of student-faculty interaction on undergraduate international students' academic outcome* (Doctoral dissertation). Retrieved from PQDT Open. (3609959).

Monaghan, S. (2012). *High school sports participation achieves all-time high.* Retrieved from http://old.nfhs.org/CoachingTodayContent.aspx?id=7728

Motley, R. J. (2013). *Change in measured noncognitive variables: A quantitative examination of the influence of short-term study abroad experiences* (Doctoral dissertation). Retrieved from http://studyabroad.isp.msu.edu/research/Motley_ Dissertation_2013.pdf

National Federation of State High School Associations. (2011). *2010-11 high school athletics participation survey results*. Retrieved from http://www.nfhs.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=5751&libID=5773

Oral Roberts University. (2016). Whole-person assessment. Retrieved from https://www.oru.edu/whole_person/pdfs/wp_assessment_brochure.pdf

Oswalt, P. (2010). Wake up, geek culture. Time to die. In *Wired*. Retrieved from http://www.wired.com/2010/12/ff_angrynerd_geekculture/

Otis, A. (2012). How important are extracurricular activities for admissions to

top-tier universities? *Forbes*. Retrieved from http://www.forbes.com/sites/quora/2012/08/28/for-top-students-at-elite-prep-and-magnet-high-schools-how-important-are-extracurricular-activities-for-admissions-to-top-tier-universities/#696c69b848d9

Patton, W., & McMahon, M. (2014). *Career development and systems theory: Connecting theory and practice* (3rd ed.). Boston, MA: Sense Publishers.

Peguero, A. (2011). Immigrant youth involvement in school-based extracurricular activities. *Journal of Education Research*, *104*(1), 19-27. doi:10.1080/00220670903468340

Pew Research Center. (2016). Collecting survey data. In *U.S. Survey Research*. Retrieved from http://www.pewresearch.org/methodology/u-s-survey-research/collecting-survey-data/

Redmond, B., Quin, S., Devitt, C., & Archbold, J. (2011). *A qualitative investigation into the reasons why students exit from the first year of their programme and UCD*. Retrieved from http://www.ucd.ie/t4cms/Reasons%20Why%20Students%20Leave.pdf

Reeves, D. B. (2008). The learning leader / The extracurricular advantage. *The Positive Classroom*, *66*(1), 86-87. Retrieved from http://www.ascd.org/publications/educational-leadership/sept08/vol66/num01/The-Extracurricular-Advantage.aspx

Regier, P. (2014). Using technology to engage the nontraditional student. *Educause Review*. Retrieved from http://er.educause.edu/articles/2014/9/using-technology-to engage-the-nontraditional-student

Rentzsch, K., Schutz, A., & Schroder-Aber, M. (2011). Being labeled nerd: Factors that influence the social acceptance of high-achieving students. *Journal of Experimental Education*, *79*(2), 143-168. doi:10.1080/00220970903292900

Robinson, S. (2014). *Fake geek girl: The gender conflict in nerd culture* (Master's thesis). Retrieved from PQDT Open. (1566724).

Rogers, T. A. (2016). *An evaluation of an adaptive learning tool in an introductory business course* (Doctoral dissertation). Retrieved from PQDT Open. (10128158)

Roland, B. (2015). *Race for completion: Success courses components fostering successful community college completion* (Doctoral dissertation). Retrieved from PQDT Open. (3713760)

Roulin, N., & Bangerter, A. (2013). Extracurricular activities in young applicants' resumes: What are the motives behind their involvement? *International Journal of Psychology*, *48*(5), 871-880. doi:10.1080/00207594.2012.692793

Russell, A. (2011). A guide to major U.S. college completion initiatives: A higher education policy brief. *American Association of State Colleges and Universities (AASCU)*, 1-17. Retrieved from http://www.aascu.org/policy/publications/policy matters/2011/collegecompletion.pdf

Savickas, M. L. (2013). Career construction theory and practice. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (2nd ed., pp. 147–183). Hoboken, NJ: Wiley

Schawbel, D. (2013). Adam Penenberg: How gamification is going to change

the workplace. *Forbes*. Retrieved from http://www.forbes.com/sites/danschawbel/2013/10/07/adam-penenberg-how-gamification-is-going-to-change-the-workplace/#235eb4b039e5

Scheaffer, R. L., Mendenhall, W., Ott, R. L., & Gerow, K. G. (2012). *Elementary survey sampling* (7th ed.). Boston, MA: Brooks/Cole.

Scrivener, S., & Coghlan, E. (2011). *Opening doors to student success: A synthesis of findings from an evaluation at six community colleges*. Retrieved from https://eric.ed.gov/?q=Scrivener+and+Coghlan&id=ED517453

Seltman, H. J. (2015). *Experimental design and analysis*. Retrieved from http://www.stat.cmu.edu/~hseltman/309/Book/Book.pdf

Shaevitz, M. H. (2013). What college admissions offices look for in extracurricular activities. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/marjorie-hansen-shaevitz/extra-curricular-activities-college admission_b_3040217.html

Shipley, J. (2015). *Clairvoyant learning: The strangeness of playing games* (Master's thesis). Retrieved from http://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1030&context=samfox_art_etds

Shulock, N., & Jenkins, D. (2011). *Performance incentives to improve community college completion: Learning from Washington state's student achievement initiative - A state policy brief*. Retrieved from http://files.eric.ed.gov/fulltext/ED517934.pdf

Shulruf, B. (2010). Do extra-curricular activities in schools improve educational

outcomes? A critical review and meta-analysis of the literature. *International Review of Education / Internationale Zeitschrift Für Erziehungswissenschaft, 56*(5/6), 591-612. doi:10.1007/s11159-010-9180-x

Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange, 1*(1), 64-85.

Stock, J. H., Wright, J. H., & Yogo, M. (2012). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business and Economic Statistics, 20*(4), 518-529. doi:10.1198/073500102288618658

Stoddard, S. (2014). Hidden information. In *Wizards of the Coast*. Retrieved from http://Magic the Gathering.wizards.com/en/articles/archive/ld/hidden-information-2014-10-24

SurveyMonkey. (2011). How many days does it take for respondents to respond to your survey? Retrieved from blog.surveymonkey.com/blog/2011//06/08/time-to-respond/

Swail, W. S. (2004). *The art of student retention: A handbook for practitioners and administrators*. Retrieved from http://files.eric.ed.gov/fulltext/ED485498.pdf

Thelin, J. R. (2004). *A history of American higher education*. Baltimore, MD: John Hopkins University Press.

The Pell Institute and Pathways to College Network. (2016). Analyze quantitative data. In *Evaluation Toolkit*. Retrieved from http://toolkit.pellinstitute.org/evaluation-guide/analyze/analyze-quantitative-data/

Thurmond, V. A., & Popkess-Vawter, S. (2003). Examination of a middle range theory:

Applying Astin's input-environment-outcome (IEO) model to web-based education. *Online Journal of Nursing Informatics, 7*(2). Retrieved from http://ojni.org/7_2/thurmond.htm

Tinto, V. (1987a). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago, IL: The University of Chicago Press.

Tinto, V. (1987b). *The principles of effective retention*. Paper presented at the Fall Conference of the Maryland College Personnel Association. Largo, MD. Retrieved from http://eric.ed.gov/?id=ED301267

Tinto, V. (1998). College as communities: Taking the research on student persistence seriously. *Review of Higher Education*, *21*, 167-178.

Tinto, V. (2009). How to help students stay and succeed. *Chronicle of Higher Education, 55*(22), A33.

Tinto, V., & Goodsell, A. (1993). Freshman interest groups and the first year experience: Constructing student communities in a large university. Paper presented at the annual meeting of the College Reading and Learning Association. Kansas City, MO. Retrieved from https://eric.ed.gov/?q=Tinto+and+goodsell&id=ED358778

Tocci, J. (2009). *Geek cultures: Media and identity in the digital age* (Doctoral dissertation). Retrieved from http://repository.upenn.edu/cgi/viewcontent.cgi?article=2112&context=edissertations

Tufekci, Z. (2014). Geek culture is smart and creative. *New York Times*. Retrieved from http://www.nytimes.com/roomfordebate/2014/09/18/when-geeks-rule/geek-culture-is smart-and-creative

Turkay, S., Adinolf, S., & Tirhali, D. (2012). *Collectible card games as learning tools*.

Retrieved from https://www.academia.edu/1468896/Collectible_Card_Games_as_Learning_Tools

United States Census Bureau. (2014). *Nearly 6 out of 10 children participate in extracurricular activities, census bureau reports*. Retrieved from http://www.census.gov/newsroom/press-releases/2014/cb14-224.html

University of Leicester. (2016). David Kolb. In *Graduate School*. Retrieved from http://www2.le.ac.uk/departments/gradschool/training/eresources/teaching/theories/kolb

University of Wisconsin Milwaukee. (2016). Astin's I-E-O model. In *Student Affairs*. Retrieved from http://uwm.edu/saassessment/assessment-cycle-reports/ieo-model/.

Urban, W. J., & Wagoner, J. L. (2013). *American education: A history* (5th ed.). New York City, NY: Routledge, Taylor, and Francis Group.

Ward, M. R. (2014). 'I'm a geek I am': Academic achievement and the performance of a studious working-class masculinity. *Gender & Education*, *26*(7), 709-725. doi:10.1080/09540253.2014.953918

Williams, I. (2013). On geek culture. *Jacobin*. Retrieved from https://www.jacobinmag.com/2013/08/on-geek-culture/

Wilson, D., Jones, D., Kim, M. J., Allendoerfer, C., Bates, R., Crawford, J., & Veilleux, N. (2014). The link between cocurricular activities and academic engagement in engineering education. *Journal of Engineering Education, 103*(4), 625-651.

Wizards of the Coast. (2016a). Magic the Gathering: The Gathering comprehensive rules.

In *Wizards of the Coast*. Retrieved from http://Magic the Gathering. wizards.com/en/gameinfo/gameplay/formats/comprehensiverules

Wizards of the Coast. (2016b). Magic the Gathering is strategy. In *Wizards of the Coast*. Retrieved from http://Magic the Gathering.wizards.com/en/content/strategy

Wizards of the Coast. (2016c). Procedures. In *Wizards of the Coast*. Retrieved from http://Magic the Gathering.wizards.com/en/content/pro-players-club

Wizards of the Coast. (2016d). The history of Magic the Gathering. In *Wizards of the Coast*. Retrieved from http://Magic the Gathering.wizards.com/en/content/history

Woo, B. (2012). Alpha nerds: Cultural intermediaries in a subcultural scene. *European Journal of Cultural Studies, 15*(5), 659-676. Retrieved from http://dx.doi.org/ 10.1177/1367549412445758

York, T. T., Gibson, C., & Rankin, S. (2015). Defining and measuring academic success. *Practical Assessment, Research & Evaluation, 20*(5), 1-20. Retrieved from http://pareonline.net/getvn.asp?v=20&n=5

Vita

Bob Lynch is currently an English instructor at Ozarks Technical Community College. He holds an A.A. from Ozarks Technical College in Springfield, MO; a B.A. in English from Missouri State University in Springfield, MO; and an M.A. in Teaching from Missouri State University in Springfield, MO. He has a strong passion for teaching, learning, and developing education.

Bob was also Director of Education at the Center for National Threat Assessment. Prior to CNTA, he was a Lead Data Analyst at Apple, Inc. in Cork, Ireland. Before moving to Ireland, Bob taught composition for Missouri State University and English at Reeds Spring High School. He was also a technical writer for a couple corporations, most notably Jack Henry and Associates. He also served six years in the United States Army.

Outside of his working life, Bob enjoys spending time with his wife, Tiffany, and two children, Macy and Michael. He loves to travel, especially internationally, specifically to Ireland and the United Kingdom. He loves playing all types of games, particularly Magic the Gathering, a game he has played since its introduction in 1993. He loves playing guitar and writing music. Bob currently resides in Springfield, MO, but he is always ready to go on an adventure.