


INQUIRY



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The Predictive Relationship Between Personality, GPA, and Membership in Nontraditional Student Populations

Andrea Palmisano

Community colleges are academic institutions with a large number of nontraditional students whose needs must be understood before their academic needs can be fully addressed. Previous research studies have established a positive correlation between academic performance and the personality traits of Conscientiousness and Openness to Experiences, and to a lesser extent the traits of Extraversion and Agreeableness. In contrast, a negative correlation has been demonstrated between the trait of Neuroticism and academic performance. These studies were conducted primarily in four-year institutions, making the generalization of results to community college students inappropriate. The present study explored the predictive relationship between personality traits, GPA, and membership into a traditional and nontraditional student category using a non-experimental regression research design. A stepwise forward logistic regression was conducted with data provided by 163 students attending a major community college in the Southeastern region of the United States. Results indicated the trait of Neuroticism accounts for about 10% of the variability between traditional and nontraditional students, thus serving as a predictor variable. Information regarding how faculty members and staff can utilize study findings, as well as recommendation for future studies, are included.

Qualitative Analysis of Corequisite Instruction in a Quantitative Reasoning Course

Zachary Beamer

In corequisite models of instruction, marginally prepared students are placed directly into college-level coursework, taught with a paired support course. Initial research suggests that such models yield significant improvements in the number of students passing credit-level mathematics when compared to previous models of prerequisite remediation. The present study employs qualitative methods to investigate methods of instruction at one community colleges to understand how instructors identify and respond to student needs. It concludes with recommendations for practice and highlights advantages of small format corequisite classes taught by the same instructor.

Coping and Suicide Among At-Risk Community College Students

Laura E. Martin and Lynn Bohecker

The authors investigated the complex relationships of coping associated with suicide risk among community college students. Survey responses were obtained from 733 participants. A multiple linear regression demonstrated that maladaptive coping such as self-distraction, substance use, and denial were predictive factors of suicide among students in the 18–29 age group. Self-distraction and denial were significant coping protective factors of suicide risk for students aged 29–67. Implications for increasing suicide awareness and prevention in education are discussed.

Negotiating a New Blend in Blended Learning: Research Roots

Laura Fuller

Blended learning has a muddled history but is still evolving. Technological innovations and the COVID-19 pandemic of 2020 led higher education to create a new blend to blended learning, one that did not follow the generally accepted and most numerous definitions or previous examples of blended learning. This new blend of blended learning lacks the physical environment and face-to-face instruction and consists of all computer-mediated instruction in the form of both asynchronous online instruction and synchronous instruction via videoconferencing and computerized webinar tools. This arrival of a new blend of blended learning requires educators to develop and implement a new instructional mode. This paper aims to assist educators with their pursuit of effective strategies for the successful design and implementation of this new blend of blended learning by providing an overview and discussion of how research on blended learning may be interpreted and applied to equip educators to be more prepared to design and to implement their own new blend of blended learning courses. The origins of distance learning, the development of blended learning, blended learning's links to technological development, the ambiguity of terminology referring to these learning forms, and the advantages and drawbacks of blended learning are presented through a review of published research.

College Students' Perceptions of the Cooperative Learning Process

Christopher Arra

The goal of the study was to assess the effects of gender on college students' perceptions of the cooperative learning process. Ninety-five college students completed 5 open-ended questions that asked students about their preferences for cooperative learning activities. Fifty-one female and 44 male students participated in the study. Utilizing qualitative research design, the study compared responses to the five questions across genders. The principal investigator analyzed data to identify themes, frequency of response, percentage of response, and emergent categories. Some qualitative findings were that male and female students prefer the same type of group work, and male and female students both agreed that providing rewards and full group participation are ways of making group work more enjoyable.

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EDITOR'S NOTE

One of my favorite memes is derived from the award-winning sitcom *30 Rock*. The protagonist Liz Lemon, the perpetually swamped head writer and showrunner, notes the hectic nature of her work environment to her boss and mentor Jack Donaghy: “What a week, huh?” Donaghy replies, “Lemon, it’s Wednesday.”

It is a great meme because we have all been there. I am sure that everyone can relate to that feeling many times over the past year. Every colleague that I have spoken to has shared feelings of being overwhelmed, stressed out, and exhausted as the line between home and work environment blurred in our shift to remote learning. But what also emerged in all of those conversations is how important it was to embrace the challenge. Putting students first and striving for equity no matter the circumstances might result in a heavier workload and emotional labor, but VCCS faculty, staff, and administrators understand this responsibility. Like Liz Lemon, we’re prepared to work exceptionally hard to meet our goal of student success, even if it means wondering which day of the week it is.

The timing of this issue is ideal. We are publishing this themed collection of scholarship on meeting students’ academic and mental health needs just weeks away from the implementation of the new VCCS strategic plan *Opportunity 2027*, which foregrounds achieving equity and identifying various students’ needs to succeed in our community colleges. The exceptional scholars featured here conducted in-depth studies and thoroughly researched exigent issues to develop and further conversations in higher education about student learning.

In her study, Andrea Palmisano examines what personality traits can tell us about the academic needs of nontraditional students. Returning author Zachary Beamer takes a qualitative approach to how instructors can meet students’ needs in corequisite mathematics courses. Laura E. Martin and Lynn Bohecker investigate mental health needs in their study of coping and stress associated with suicide risk in community college students. Laura Fuller provides an in-depth overview of blended learning as well as strategies to meet students’ needs in blended learning environments. Christopher Arra’s study of gender differences in cooperative learning in a psychology classroom offers insights into effective collaboration strategies to satisfy students’ unique needs.

I am grateful for each of these wonderful contributions to *Inquiry*. They are thoughtful, well-composed research papers that demonstrate the vibrant, important conversations held across the VCCS as we constantly strive to provide high-quality education. I hope that our new redesign of articles to achieve a clean, simple aesthetic improves the readability of their works.

I am also grateful to our student contributor Ronald Bentley of Tidewater Community College. His photograph Albemarle Sunset caught my eye over a year ago, and it beautifully captures not only the mental vacation that we all could use but also the onset of what could be a much-needed normal summer.

My gratitude goes out to all who continue to support *Inquiry* by reading each issue of the journal. We are closing in on 40,000 total downloads since becoming a digital-only publication, which shows the impact of the work featured in *Inquiry* and its importance to higher education practitioners worldwide. We are incredibly grateful for the unwavering support of the VCCS as well as everyone who submits to the journal; we continue to publish in every issue works that were originally in need of major revisions, and we thank every author who takes the time to read the feedback of our editorial board.

Thank you most of all to the exceptional editorial board of *Inquiry*. They are integral to the success of this journal, and it is an honor to serve alongside them. I read all of their reviews of submitted manuscripts, and I am always impressed by how thorough, attentive, and constructive they are in their feedback. The publishing process can be daunting for writers, but our reviewers make the process one that is encouraging for any prospective *Inquiry* author. Both Elizabeth Benson and Bethany Arnold have been reviewing for *Inquiry* for at least 4 years, preceding my time as the Managing Editor, and they shape the standard of this journal with their incredible insights and advice as they build conversations with authors. Lisa Vaughn Jordan always closely engages writers by highlighting how carefully they address the target audience and craft the exigence of the argument. Our newest editorial board member Amy Anderson has quickly displayed her eye for effective research studies, substantiating each piece of commentary with details and examples.

If you are considering submitting to *Inquiry*, I encourage you to do so. I can assure you that our review team will take the time to immerse themselves in your manuscript and articulate what it may need to be a perfect fit for our journal. We accept submissions on a rolling basis, and you can always reach out to me or the editorial board if you have questions.

My sincerest thank you to all who read and support *Inquiry*.

Tom Geary
Managing Editor

5-7-2021

The Predictive Relationship Between Personality, GPA, and Membership in Nontraditional Student Populations

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The Predictive Relationship Between Personality, GPA, and Membership in Nontraditional Student Populations

Cover Page Footnote

This article is based on my dissertation study.

The Predictive Relationship Between Personality, GPA, and Membership in Nontraditional Student Populations

Andrea Palmisano

Community colleges are academic institutions with a large number of nontraditional students whose needs must be understood before their academic needs can be fully addressed. Previous research studies have established a positive correlation between academic performance and the personality traits of Conscientiousness and Openness to Experiences, and to a lesser extent the traits of Extraversion and Agreeableness. In contrast, a negative correlation has been demonstrated between the trait of Neuroticism and academic performance. These studies were conducted primarily in four-year institutions, making the generalization of results to community college students inappropriate. The present study explored the predictive relationship between personality traits, GPA, and membership into a traditional and nontraditional student category using a non-experimental regression research design. A stepwise forward logistic regression was conducted with data provided by 163 students attending a major community college in the Southeastern region of the United States. Results indicated the trait of Neuroticism accounts for about 10% of the variability between traditional and nontraditional students, thus serving as a predictor variable. Information regarding how faculty members and staff can utilize study findings, as well as recommendation for future studies, are included.

Community colleges are academic institutions with unique characteristics, including an open-enrollment format, students with demonstrated less sophisticated cognitive abilities, less academic preparedness, and an overall weaker foundation for learning (Burns, 2010; Grimes & David, 1999; Hughes & Scott-Clayton, 2011). Crawford and Jervis (2011) suggest that community colleges often present with a higher rate of older students who are part-timers and in need of academic remediation, while Jaeger and Eagan (2009) state that community colleges employ more part-time faculty than any other type of educational institution, leaving students in the unique position of being educated by faculty members who are often not involved in administrative decisions or overall campus activities. The American Association of Community Colleges (2015) reports that almost half of all undergraduate students in the United States attend community colleges, preparing them to either transfer to a 4-year college or enter the workforce, making it imperative that their needs be accurately understood. Dowd (2007) describes community colleges as “gatekeepers” that share the burden of educating those with less sophisticated educational

backgrounds, which in turn allow four-year colleges to focus on better prepared students (p. 407). Despite all these findings, community college students are still an evolving group of learners who must be better understood so their needs can be accurately met (Miller, Pope, & Steinmann, 2005).

Nontraditional Student Population

The definition of a nontraditional student has developed over time from students older than 25 as the initial criteria to more complex social factors such as financial independence from a parent, being a single parent, or holding a GED rather than a high school diploma (Kim, 2002). The National Center for Education Statistics (2017) provides seven factors that define nontraditional students, including (a) delayed enrollment in college, (b) part-time student status, (c) financially independent and over the age of 24, (d) full-time employment, (e) having dependents, (f) being a single parent, and (g) having a GED.

The current understanding of the psychological characteristics of nontraditional students attending college is varied. Previous quantitative research on nontraditional students at four-year institutions indicates that this group of students tends to demonstrate stronger mastery achievement goals, better coping strategies when handling stress, and stronger academic performance (Johnson & Nussbaum, 2013), as well as higher levels of maturity, more experience, and better-established values (Wyatt, 2011). In contrast, Macari, Mary and D'Andrea (2006) suggest that nontraditional students demonstrate lower abilities in establishing goals, developing autonomy, and maintaining interpersonal relationships. Taniguchi and Kaufman (2005) state that older students who attend school part-time, have young children or are divorced have lower graduation rates, while Spellman (2007) emphasizes that adult learners face several barriers when attending community colleges, including lower cognitive abilities, multiple personal responsibilities, financial difficulties, and social barriers.

Five-Factor Theory

According to McCrae (2011), the five-factor personality model provides an understanding of personality development that takes into account both innate and external variables and presents basic personality traits shared by all individuals, including Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. These five basic dimensions, according to the author, are considered predispositions occurring within the individual while external influences, in the form of cultural standards, impact the expression of individual innate traits. The development of the five-factor trait theory began during the Mental Testing era, first established in the 1800s by Galton and further explored by Thurstone and Cattell. The principles held by these early researchers include the belief that behavioral differences among individuals could be explained by examining personality traits, differences among individuals could be described with the use of single-adjectives, and that identification of personality differences helped psychologists pinpoint which traits were linked to optimal psychological health (Chamorro-Premuzic & Furnham, 2005). Research indicates that personality traits based on the Five-Factor personality model are strongly correlated with academic success, with the traits of Conscientiousness and Openness to Experience demonstrating the greatest impact on educational achievement (Stumm, Hell, & Chamorro-Premuzic, 2011).

Five-Factor Personality Traits and Academic Performance

Openness to Experience. Muhlig-Versen, Bowen, and Staudinger (2012) describe the trait of Openness to Experience as individuals' overall levels of intellectual curiosity and imagination, tendencies toward thrill-seeking circumstances, and preferences for unconventional and unique stimuli. In contrast, individuals with low levels of this trait are described as avoiding change and unfamiliar settings, demonstrating a dislike for the unconventional. The trait of Openness to

Experience was investigated by Bauer and Liang (2003) on a sample of 265 first-year college students and found to be significantly and positively associated with students' levels of effort exertion and academic performance.

Conscientiousness. The trait of Conscientiousness represents individuals' tendencies toward organization, willfulness, diligence, neatness, and achievement-orientation, whereas lower levels of this trait are associated with weaker tendencies toward goal-directed behaviors (McCrae & John, 1992). Komarraju, Karau, Schmeck, and Avdic (2011) state that Conscientiousness has been highly correlated with academic achievement among college students, enhancing their ability to learn regardless of personal learning styles. O'Connor and Paunonen (2007) state that individuals with high levels of Conscientiousness demonstrate stronger academic learning due to tendencies toward self-discipline and organization.

Extraversion. McCrae and John (1992) discuss the array of adjectives available in the literature to describe individuals with high levels of Extraversion, including talkative, social, warm, gregarious, outgoing, dominant, energetic, and enthusiastic, while those with lower levels of this trait are seen as quiet, timid, reserved, silent, and withdrawn. Komarraju, Karau, Schmeck, and Avdic (2011) state that a positive correlation had been found between Extraversion and academic achievement, though such relationship is not as strong as those found between the other five-factor traits and educational success.

Agreeableness. The trait of Agreeableness is associated with high levels of altruism and emotional support, a caring attitude, and overall concern for others, while low levels of this trait lead to hostile behavior, vengeance, indifference, and egocentrism (McCrae & John, 1992). According to Komarraju, Karau, Schmeck, and Avdic (2011), Agreeableness is correlated with academic achievement but not with the same strength as Conscientiousness and Openness to Experience. O'Connor and Paunonen (2007) actually report a negative correlation between Agreeableness and

academic performance, indicating that further research is required regarding the true impact of this trait on school-related behaviors.

Neuroticism. The trait of Neuroticism is reported as one's overall tendency to experience emotional distress and the specific cognitions and behaviors associated with it, including tension, low self-esteem, poor impulse control, pessimism, anxiety, and restlessness. In contrast, individuals with low levels of this trait demonstrate high levels of resilience, flexibility, coping skills, and resourcefulness (McCrae & John, 1992). Diseth (2013) indicates a negative relationship between Neuroticism and overall academic performance, while also reporting a positive correlation between this trait and surface learning, present when students are not invested in the intellectual experience of learning but rather just trying to pass their classes.

The Relationship between GPA and Personality Traits

McAbee and Oswald (2013) conducted a meta-analysis of existing literature regarding the relationship between the Big-Five personality traits and students' academic performance based on GPA with results indicating the trait of Conscientiousness to be the most stable personality predictor. Additional research has confirmed the relationship between the trait of Conscientiousness and students' GPAs. Cheng and Ickes (2009) delineate students' high levels of Conscientiousness and motivation to be predictive of a high GPA, and that high levels of Conscientiousness actually compensate for students' low levels of motivation.

Chowdhury and Amin (2006) state that students with high levels of Conscientiousness and Agreeableness receive higher academic grades than those with lower levels of these personality traits. Nofle and Robins (2007) indicate high levels of Conscientiousness to be positively correlated with a higher GPA at both the high school and college level, high levels of Openness to experience to be weakly and positively correlated with a high GPA at the college level, high levels of Agreeableness to

have a weak correlation with a high GPA at the high school level, and high levels of Extraversion to be weakly and negatively correlated with a high GPA at the college level. Similarly, Poropat (2009) conducted a meta-analysis including 80 studies and over 70,000 total participants, and demonstrates the trait of Conscientiousness to be consistently and positively correlated with a high GPA, followed by consistent but weaker positive relationships between the traits of Openness to experience, Agreeableness, and GPA.

The validity and concerns regarding the use of GPA, including self-reporting measures, as a reflection of academic success are discussed by Kuncel, Credé, and Thomas (2005). The authors state that students' grade point average are strong predictors of overall academic success, work performance, and overall life satisfaction, and also serve as the most commonly used measure of academic performance in research studies related to education. While the use of self-reporting measures presents challenges related to the verification of their accuracy, and therefore a possible threat to a study's validity, their meta-analysis study indicates self-reported college GPA's to have an overall high level of validity.

Purpose of the Study

The presence of contradicting information regarding nontraditional students in the literature indicates that a clear understanding of the psychological strengths and challenges facing this group of individuals in their pursuit of a higher education is still unclear. While most of the existing research on this topic has been primarily done at the four-year level, the majority of nontraditional students attend community colleges (Kim, 2002). The present study aims to add knowledge regarding how psychological factors, in the form of personality traits, and academic performance, in the form of GPA, predict students' membership into a nontraditional student category at the community college level.

Primary research question

Do personality traits and academic performance, as measured respectively by the NEO-FFI and a traditional four-point scale GPA, predict membership into a nontraditional student category at the community college level?

Method

Participants

The sample in the study included 163 students attending a major community college in the Southeastern region of the United States who had completed at least one semester of coursework and therefore had a reportable GPA. Participants were selected through a non-probability, purposive, and heterogeneity sampling design and invited to participate via email. The email included a link to Survey Monkey, where the data collection procedure took place electronically.

Data Collection

Once a student accepted the invitation to participate and acknowledged the informed consent, a series of seven yes/no demographic questions were asked in order to determine their membership into the traditional or nontraditional student category (Appendix). Each one of the seven demographic questions addressed one of the specific characteristics of nontraditional students, as determined by the National Center for Education Statistics (2017). According to Horn (1996), students with at least four nontraditional characteristics are considered highly nontraditional, and therefore were placed in the nontraditional student category for the present study. Students with less than four nontraditional characteristics were placed in the traditional category.

Once the demographic questions were answered, participants were asked to self-report their current GPA. The inclusion of a self-reported GPA as a predictor variable is a limitation of the present study, since students' GPA were not independently validated before being included in the data analysis.

Next, participants were presented with the NEO-FFI-3 assessment tool, which includes 60 Likert Scale test items, 12 items per personality dimension including Conscientiousness, Openness to Experience, Agreeableness, Extraversion, and Neuroticism, based on the five-factor personality model. Survey Monkey monitored the study and continued gathering data until the required number of participants was fulfilled. The estimated sample size included 163 students, based on calculations made with G*power for a binary logistic regression, $\alpha = .05$, effect size = .15, and power = .80 (Faul, Erdfelder, Buchner, & Lang, 2009). Once the required number of participants was reached, Survey Monkey deactivated their link to the study.

Data Analysis

A stepwise forward logistic regression analysis was conducted with Conscientiousness, Openness to Experience, Neuroticism, Extraversion, Agreeableness, and GPA as predictive variables, and membership into a traditional or nontraditional student category as the categorical outcome variable.

Results

An initial analysis of the data indicated that the null model, with no added independent variables, had an overall 63.2 correct predictive percentage, as demonstrated in Table 1.

	Observed Student Category	Predicted Student Category		Percentage Correct
		Traditional	Nontraditional	
Step 0	Traditional	103	0	100.0
	Nontraditional	60	0	.0
	Overall Percentage			63.2

Table 1. Null Model with 63.2 Overall Correct Predictive Percentage

Table 2 indicates that the overall model would not be significantly improved with the addition of GPA and personality traits as predictive variable (8.084, $df = 6$, $p = .232$), and that the personality trait of Neuroticism is the only variable that demonstrates a predictive ability (5.663, $df = 1$, $p = .017$).

		Score	Df	Sig.
Step 0	Variables			
	Self-reported GPA	.206	1	.650
	Openness	1.836	1	.175
	Conscientiousness	3.503	1	.061
	Extraversion	3.583	1	.058
	Agreeableness	.080	1	.777
	Neuroticism	5.663	1	.017
Overall Statistics		8.084	6	.232

Table 2. Predictive Variables and their Impact on Overall Model

Table 3 demonstrates a significant value for the predictor Neuroticism when introduced to the regression equation, with Wald $X^2(1) = 5.506$, $p = .019$, Exp B = .961, indicating that students with high scores on the Neuroticism personality trait are about 10% less likely to be in the nontraditional category.

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Neuroticism	-.040	.017	5.506	1	.019	.961	.929	.993
	Constant	.374	.416	.807	1	.369	1.453		

Table 3. Neuroticism Variable Included in the Model

Table 4 demonstrates the change in $-2LL$ value if the trait of Neuroticism was removed from the equation, with $-2LL = 5.708$, $df = 1$, $p = .017$, indicating that this predictor variable should not be removed from the overall model.

		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	Neuroticism	-107.244	5.708	1	.017

Table 4. Change in Model if Neuroticism Variable was Removed

Summary of the Results

A forward stepwise logistic regression analysis of the data indicated that students with higher scores on the personality trait of Neuroticism are more likely to belong to a traditional student category, whereas students' GPA as well as scores on the traits of Openness to Experience, Conscientiousness, Agreeableness, and Extraversion did not serve as significant predictors regarding students' membership into a traditional or nontraditional student category. Specifically, results

indicated that the trait of Neuroticism accounts for about 10% of the variability between traditional and nontraditional students at the community college level.

The null model, with no specific predictor variables included, demonstrated a 63.2% predictive ability, based simply on the ratio of traditional and nontraditional students present in the study sample. The addition of the trait Neuroticism as a predictor variable improved the model's predictive ability to 63.8% when all other predictor variables were statistically controlled for.

Discussion of the Results

Previous research studies report mixed results regarding nontraditional students' ability to succeed academically at the college level. Some studies state that nontraditional students demonstrate stronger mastery achievement goals, better coping strategies when handling stress, and therefore stronger academic performance (Johnson & Nussbaum, 2013), as well as higher levels of maturity and more experience (Wyatt, 2011). In contrast, Macari, Mary and D'Andrea (2006) suggest that nontraditional students demonstrate lower abilities in establishing goals, developing autonomy, and maintaining interpersonal relationships, while Taniguchi and Kaufman (2005) report that older students who attend school part-time, have young children, or are divorced have lower graduation rates. Kim (2002) emphasize that previous studies were primarily conducted on 4-year college students, thus making the generalization of results regarding traditional and nontraditional students inappropriate to the community college level.

The present study demonstrates that traditional and nontraditional students differ in their levels of Neuroticism, a personality trait primarily associated with individuals' tendency toward experiencing irritation, emotional instability, and sadness (John, Naumann, & Soto, 2008). Additionally, study results indicate that traditional and nontraditional students do not differ in their overall academic performance and their levels of Conscientiousness, Openness to Experience,

Agreeableness, and Extraversion. Overall, these findings suggest that both traditional and nontraditional students share similar traits regarding organization, achievement-orientation, neatness, sociability, altruism, and intellectual curiosity.

Additionally, study results confirm previous findings regarding the relationship between personality traits and academic performance (Chowdhury & Anin, 2006; Komarraju et al., 2011; McAbee & Oswald, 2013; O'Connor & Paunonen, 2007). Specifically, a positive correlation was found between students' GPA and the trait of Conscientiousness ($r = .163, p = .037$). Finally, study results demonstrated a positive correlation between the traits of Neuroticism and Openness to Experience ($r = .22, p = .005$), and negative correlations between the traits of Neuroticism and Conscientiousness ($r = -.42, p < .01$), Neuroticism and Extraversion ($r = -.52, p < .01$), and Neuroticism and Agreeableness ($r = -.161, p = .04$)

Conclusions Based on the Results

Based on study results, Neuroticism explains about 10% of the variance between traditional and nontraditional community college students, and therefore can serve as a predictor variable for membership into a traditional and nontraditional student category. In contrast, traditional and nontraditional community college students demonstrate similar levels of Conscientiousness, Openness to Experience, Extraversion, and Agreeableness, as well as similar levels of academic performance, based on their GPA. As a result, students' GPA and the traits of Conscientiousness, Openness to Experience, Extraversion, and Agreeableness do not significantly predict membership into a traditional and nontraditional student category.

Limitations

The limitations associated with the present study included the use of self-reported GPAs, the sampling of participants from a single geographical area in the United States, and the use of a single online survey to measure personality traits, GPA, and membership into a traditional and nontraditional student category.

Since self-reported GPAs could not be independently verified by the researcher, it is possible that students provided a GPA that did not truly reflect their academic performance. Likewise, students might have answered the NEO-FFI-3 based on their expectations of what constitutes an appropriate response, rather than their true personality tendencies. Finally, the use of participants solely from one community college in the Southeastern region of the United States leads to the possibility that confounding variables associated with local cultural factors impacted the results.

Implications for Practice

Study results indicated that 10% of the variability between traditional and nontraditional students is due to levels of the Neuroticism personality trait. Specifically, traditional students are more likely than nontraditional students to have higher levels of Neuroticism. This personality trait, according to John, Naumann, and Soto (2008), increases individuals' levels of irritation, emotional instability, and sadness. McCrae and John (1992) state that individuals with high levels of Neuroticism are more likely to experience tension, low self-esteem, poor impulse control, pessimism, anxiety, and restlessness. Furthermore, the trait of Neuroticism has been negatively correlated with students' GPA (O'Connor & Paunonen, 2007). As a result, community colleges would benefit from providing incoming and returning students, especially those in the traditional student category, with resources to strengthen their overall resilience, emotional regulation, and

conflict resolution skills, thus combating their tendency toward behaviors associated with the trait of Neuroticism.

Additionally, faculty members and counselors teaching SDV courses could incorporate a personality assessment into their course curriculum in order to determine students' personality traits, independent of their traditional or non-traditional study category. Such effort would allow students to increase their self-awareness related to their behavioral tendencies that have been empirically determined to be either helpful or challenging toward one's educational efforts. Based on assessment results, students could then be given resources and tasks addressing their specific strengths and weaknesses, thus receiving a very tailored and relevant educational plan.

Finally, professional development workshops geared toward community college faculty and staff would benefit from the inclusion of information regarding traditional students' potential tendency toward Neuroticism traits. Since these are young adults initiating their higher education academic journey at the community college level, the implementation of programs that strengthen these students' overall ability to regulate their emotions and combat stress would benefit all involved, including students, faculty, and administration. Likewise, professional development workshops that emphasize the important relationship between personality traits and academic success would enhance community college faculty and staff members' overall ability to address the needs of their student population.

Recommendations for Further Research

The investigation of additional predictor variables regarding membership into a traditional and nontraditional student category is recommended. While personality traits, based on the NEO-FFI-3, and academic performance, based on GPA, were explored in the present study, only 10% of the variability between the two groups could be explained based on students' levels of Neuroticism.

As a result, additional variables could offer insight regarding differences between traditional and nontraditional community college students. Specifically, Bannert, Reimann, and Sonnenberg (2014) report that students who demonstrate successful self-regulatory behaviors show better planning skills, processing abilities, and elaboration techniques in the classroom, thus achieving higher academic goals and, consequently, higher levels of self-efficacy. The authors suggest that self-regulation allows individuals to engage in more efficient and functional behavioral patterns, leading to increased levels of personal satisfaction and well-being.

Motivation is an additional variable that could be investigated in future studies regarding traditional and nontraditional students. Bandura (1986) discusses the relationship between self-efficacy and motivation, emphasizing that individuals' ability to purposefully act toward fulfilling their goals is closely linked to their perceived levels of self-competence. According to the author, individuals who do not clearly understand the connection between their goals, abilities, actions, and outcomes are less motivated to initiate behavior. Fries and Dietz (2007) report a strong correlation between motivational levels and students' ability to resist temptations, focus, and follow-through with decisions. The authors state that students are less likely to be impacted by social and cognitive interferences when they are clear regarding the benefits of staying on task. Boström and Lassen (2006) discuss the relationship between motivation and self-efficacy, stating that students who do not feel capable of completing a task have no motivation to complete it. As a result, motivation might potentially serve as a predictor variable regarding membership into a traditional and nontraditional student category.

It is further recommended that future studies include the investigation of GPA and personality traits as predictor variables in both community and 4-year college students so that a deeper understanding regarding the overall differences between traditional and nontraditional students at higher education institutions is reached.

Conclusion

A stepwise forward logistic regression analysis was conducted in order to investigate the predictive relationship between personality traits, based on the NEO-FFI-3, academic performance, based on self-reported GPA, and membership into a traditional and nontraditional student category at the community college level. Results indicate that the trait of Neuroticism explains about 10% of the variability between traditional and nontraditional students and therefore can serve as a predictor variable. In contrast, no significant difference was found between traditional and nontraditional students regarding their GPA and the traits of Openness to Experience, Conscientiousness, Extraversion, and Agreeableness, suggesting that these variables do not serve as predictor factors regarding membership into traditional and nontraditional student groups.

Community colleges might benefit from providing students with resources that increase their ability to regulate their emotions and therefore decrease their tendencies toward experiencing negative emotions, especially those that fall into a traditional student category. Personality assessment tools could be introduced to SDV courses to provide students with information regarding personal behavioral tendencies that have been found to either promote or hinder academic success. Additionally, it is recommended that future studies focus on the predictive relationship between variables such as self-regulation and motivation and membership into a traditional and nontraditional study category both at the community and 4-year college settings in order to gain further insight into any variability between these two student groups.

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Appendix

Demographic Questions Used to Determine Students'

Traditional or Non-traditional Status

1. Did you enroll in college right after graduating from high school?

- Yes
- No

2. Are you a part-time student?

- Yes
- No

3. Are you over the age of 24?

- Yes
- No

4. Do you work full-time?

- Yes
- No

5. Do you have any dependents?

- Yes
- No

6. Are you a single-parent?

- Yes
- No

7. Do you have a GED?

- Yes
- No

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Qualitative Analysis of Corequisite Instruction in a Quantitative Reasoning Course

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Qualitative Analysis of Corequisite Instruction in a Quantitative Reasoning Course

Cover Page Footnote

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Qualitative Analysis of Corequisite Instruction in a Quantitative Reasoning Course

Zachary Beamer

In corequisite models of instruction, marginally prepared students are placed directly into college-level coursework, taught with a paired support course. Initial research suggests that such models yield significant improvements in the number of students passing credit-level mathematics when compared to previous models of prerequisite remediation. The present study employs qualitative methods to investigate methods of instruction at one community colleges to understand how instructors identify and respond to student needs. It concludes with recommendations for practice and highlights advantages of small format corequisite classes taught by the same instructor.

Many students starting post-secondary education are identified as underprepared for college mathematics. Between 2003 and 2009, 21% of students at 4-year schools and 59% of students at 2-year schools enrolled into developmental mathematics (Chen, 2016). Of those students, only 67% of students at 4-year schools and a mere 45% of those at 2-year schools earned college-level mathematics credit (Chen, 2016). In recent years, many scholars have come to question the value of placing students into prerequisite remedial courses. Quantitative quasi-experimental research studies estimating the impact of remediation on credits earned or degree attainment suggest that receiving remediation has minimal benefits (Calcagno & Long, 2008; Boatman & Long, 2010; Martorell & McFarlin, 2011; Scott-Clayton & Rodriguez, 2015; Xu & Dadgar, 2018). Few randomized control trials have explored the issue, but one by Moss, Yeaton and Lloyd (2014) conducted at a large community college is in line with the quasi-experimental results. In the study, marginally prepared students randomly assigned to a prerequisite developmental course outperformed their directly placed peers by merely *one-third* of a letter grade.

These unimpressive results have prompted many reforms over the past decade, with the corequisite showing some promising initial results. In the corequisite model of remediation, marginally prepared students are placed directly into a college-level course, accompanied by an

additional support course (Adams et al., 2009; Daugherty et al., 2018). Though quantitative research into large-scale reforms is in its nascent stages, one study of Tennessee's 2015 reforms estimated that placing students into corequisite courses increased the number of students passing these courses by *15 percentage points* (Ran & Lin, 2019). While the initial quantitative evidence appears promising, the transition to new structures and pedagogies leaves unanswered questions about how to effectively implement corequisite models of developmental education. These gaps in the literature prompted the following research questions:

- What strategies do instructors use when teaching a corequisite course paired with a quantitative reasoning course?
- How do instructors inform their remediation practices in a corequisite course?

Literature Review

In recent years, many colleges and systems have opted to implement major reforms to their developmental programs for English and mathematics. This has included acceleration or compression (Venezia & Hughes, 2013) as well as mainstreaming, or increasing placement directly into gatekeeper credit-level courses. The practice of mainstreaming can include using measures other than placement tests such as high school GPA or previous mathematics coursework (Ngo & Kwon, 2015). Corequisite models are another instance of these reforms, in which students receive remediation in the same semester as credit-level mathematics; the co-requisite model is showing signs as a promising approach.

The articles forming the foundation of the research base for corequisites come from studies of the “Accelerated Learning Program” (ALP) (Adams et al., 2009, Cho, et al., 2012; Jenkins et al., 2010), an initiative for English remediation. In the ALP, the supplemental three-credit corequisite course was paired with a gatekeeper course – the first credit-level college course – and taught by the

same faculty member during the same semester. The remediated students were a subgroup (8 of 20) of the whole class. Courses in the ALP format address a combination of remedial and college-level content, with the overarching goal of in these ALP classes to increase students' prospects of succeeding in the paired gatekeeper course. In mathematics, what constitutes a gatekeeper course depends on the institution, and may include courses like quantitative reasoning (QR) or liberal arts mathematics, statistical reasoning (SR), intermediate algebra, or precalculus.

As corequisite reforms become more popular, they are being implemented in considerably different ways in other settings (Daugherty et al., 2018). These include a technology-based lab, additional academic support, extended instructional time, or a paired remedial course taken at an accelerated rate with the same student cohort as the credit-level course. The literature on corequisite instruction offers some discussion into the possible structures of corequisite education. Many of the guides to implementations are in the form of research briefs by institutions such as the Community College Research Center (Belfield, Jenkins & Lahr, 2016) or reports available electronically on the websites of advocacy groups such as Complete College America (2018).

Royer and Baker (2018) report the success of such initiatives at Ivy Tech in Indiana. They report that, over the first four semesters of implementation, between 58% and 64% of students in the corequisite-supported QR course successfully completed their remedial and gatekeeper mathematics courses (though the authors do not indicate what is meant by successful completion). Under the previous model of remediation, only 49% of students passed remedial algebra. Between-course attrition, a problem documented in Bailey, Jeong, & Cho (2010), meant that around a quarter of the students who completed their course neglected to enroll into gatekeeper mathematics. As a result, only 36% of the original group made it into credit-level mathematics. Though most of these students who enrolled into their gatekeeper course passed it, only 29% of remedially-placed students

made it through gatekeeper mathematics courses. However, this study was not been experimental in nature, which limits the generalizability of findings.

One randomized control trial by Logue, Watanabe-Rose, and Douglas (2016) includes 907 students who were randomly assigned to one of three courses: traditional elementary algebra, elementary algebra supported by a one-credit support “workshop,” or directly into a college-level SR course. Of the 907 students randomly assigned, 717 enrolled into their assigned course. Using statistical methods to adjust for the non-compliance of the other 190 students, the authors find that students placed into the SR course performed much better (56% pass rate) in their course than those students taking either elementary algebra with the workshop (45%) or without (39%).

One major limitation of the interpretation of these findings is that the outcome variable of *pass rates* is not the same among treatment and control groups. While other studies (e.g., Moss et al., 2014) have looked at *eventual* performance in credit-level mathematics, Logue et al. (2016) only measured success rates within the first course, whether that was algebra or the SR course. Given that the pass rate is *highest* for the SR course, this is less of a concern than some critics have expressed (e.g., Goudas, 2017; Goudas & Boylan, 2012). Indeed, these results indicate that students who might fail remedial algebra could pass a credit-level course when provided corequisite supports. When coupled with findings from Bailey, Jeong, and Cho (2010) that each additional prerequisite developmental course results in the attrition of nearly half of students, the corequisite-supported course represents a potentially significant improvement.

However, given the wide variety of methods of implementation, some scholars have been skeptical of the move towards unproven methods of developmental instruction. As Goudas (2017) notes, many of the aspects that may have been critical to the success of the ALP are absent from other models of corequisite education currently being debuted across the country. Reliable scholarly research on corequisite mathematics education is lacking. Because relatively few models have been

explored in the literature, there is relatively little information on what measures and design aspects facilitate student learning. The study by Logue et al. (2016) mostly explores the statistical analysis of results. The details of program implementation are confined to a paragraph. This brief description notes that the corequisite workshops followed a regular structure including reflection and practice on algebra topics necessary for understanding concepts within statistics.

A research brief by the Community College Research Center (Belfield, Jenkins, & Lahr, 2016) discusses initial findings from Tennessee's recent implementation of corequisite education. The authors also note that "even to the extent that corequisite remediation is effective, it is *not clear precisely what practices work best* for different subject areas and students" (2016, p. 10, italics added). Furthermore, only 51% of students at the Tennessee colleges passed their corequisite-support credit-level course. For the nearly half of students that fail their corequisite-supported class, "why this is the case and what approaches can work for these students are questions for further experimentation and research" (2016, p. 10). The causal analysis by Ran and Lin (2019) that estimated an increase in pass rates in gatekeeper mathematics of 15 percentage points also noted some major limitations. The researchers lacked detailed information on the execution and structure of learning supports. Furthermore, they were unable to measure the quality of implementation or analyze its impact on student success. This gap in the literature prompted the following qualitative research design, discussed in the subsequent section.

Methods

This research employs interviews with practitioners as well as in-person observations of instruction to characterize elements of effective corequisite instruction. According to Denzin and Lincoln (2011), the use of multiple methods adds richness and depth to qualitative inquiry. The use of multiple methods of data during analysis contributes to the triangulation of findings, as described

in Yin (2017) and Miles, Huberman, and Saldaña (2014). The current paper excerpts findings from a more comprehensive case study (Author, 2019).

Description of Site and Participants

The college in this study is a mid-sized community college in the Virginia Community College System (VCCS), Commonwealth Central Community College (CCCC; the name of the college and individuals in the study are pseudonyms). According to internal statistics reported by the institution from fall of 2017, 78% of students are part-time and 22% are enrolled full-time, making for the equivalent of approximately 3000 full-time students. The student body is broadly reflective of service region (69% white, 13% African-American, 7% Hispanic, 5% Asian, and 5% multiple race or other), with slightly more female students (58%) than male (42%).

Two instructors for corequisite courses were included in this study, Dr. Hall and Mr. Oates, both full-time faculty members. The corequisite courses, number MCR 4 were paired with a QR course, a transfer-level course aimed primarily at transfer students in general studies and liberal arts programs. The course itself had been recently developed through system-wide curriculum reforms, with the goal of increasing student success rates. As in the ALP, the corequisite course included a subgroup of eight to twelve students within a larger QR course of approximately twenty-five students.

Under the prior format of developmental instruction, students were required to take appropriate one-credit modules focusing on a developmental topic for which they had not earned credit when taking the Virginia Placement Test (VPT) (e.g., fractions). Previously, students would need to demonstrate competency on the first five modules to qualify for a standalone QR course. The corequisite reforms allowed students missing at most two of these modules to enroll into the corequisite-supported QR course. As part of the multiple measures reforms taking place in the

VCCS, detailed in Edgecombe (2016), the corequisite courses also included students with a high school GPA of between 2.7 and 3.0 who had taken Algebra II.

Observations

The principle method for addressing research questions relating to instruction in corequisite courses is 20 hours of classroom observations. These observations took place in two sections of MCR 4, each taught by a full-time mathematics faculty member. Each of the MCR 4 courses met twice weekly, for 50 minutes in length, scheduled either immediately before or after the paired QR course. Observations took place starting the fourth week of classes and continued regularly throughout the semester. These observations explored the patterns of interaction between instructor and student and the daily rhythms of the MCR 4 course. The observations were guided by a Protocol informed by the constructs established in the conceptual framework. The protocol is shown below in Table 1.

Table 1. Observation Protocol for Corequisite Support Classes

Aspect	Focus	Question
Class structure	<i>Instructor activities</i>	What activities does the instructor engage students in (e.g., lectures, worksheets, assisted independent work with computers)?
	<i>Student engagement</i>	To what extent are students actively participating in class activities?
Curriculum	<i>Remediating & re-teaching</i>	To what extent does instruction re-teach QR topics versus teach remedial content (i.e., content not explicitly tested in QR coursework)?
	<i>Integration</i>	How are discussions of remedial content embedded into QR content?
Resources & Materials	<i>Teaching resources</i>	How does the instructor use prepared materials during instruction?
	<i>Learning resources</i>	How do students use learning resources during class?
Instruction	<i>Misconceptions</i>	How do instructors identify and address individual students' prior knowledge and misconceptions?
	<i>Skills-building</i>	To what extent does instruction focus on building procedural skills versus conceptual understanding or metacognitive skills?

Interviews

Interviews supplemented observational data and offered the opportunity for instructors to reflect upon their experiences. These interviews were invaluable to answering these research questions because of their ability to provide insights into participant perspectives and explanations of events (Yin, 2017). Instructors participated in two one-hour interviews, one midway through observation and another at the conclusion of observation, which were recorded and transcribed. Other informal encounters with instructors were recorded in field notes.

Data Analysis

Following Erickson's (1986) framework for qualitative research methods, the data were coded inductively; the process of data analysis was informed by the open-coding techniques outlined in Corbin and Strauss (2008). Emphasis was placed on using *in vivo* codes that use the language of

participants. Miles, Huberman, and Saldaña (2014) recommend in vivo codes because they “prioritize and honor the participant’s voice” (p. 74) and offer good leads into identifying patterns. After initial coding, preliminary findings coalesced in the form of *assertions in analytic memos*, as described in Erickson (1986) and Miles, Huberman, and Saldaña (2014). Through a process of seeking confirming and disconfirming evidence, or what Erickson (1986) describes as *analytic induction*, these assertions and findings were revised to match the ongoing process of data collection. Finally, in the process of *member sharing* (Yin, 2017), participants in the study were provided with initial findings, and their reactions helped ensure that research findings accurately captured the voice and experience of participants.

Findings

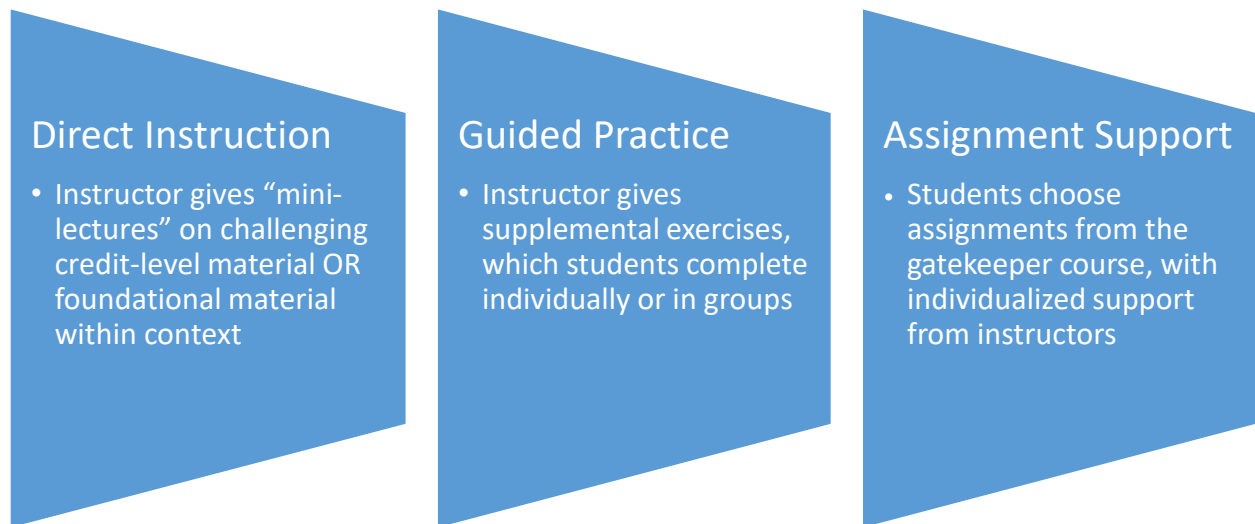
The findings below are categorized into three assertions. The first assertion describes the nature of instruction observed within the corequisite courses. The second assertion characterizes how instructors chose to utilize their instructional time for the corequisite courses. The third assertion describes some of the gaps in knowledge and other issues that students faced that instructors sought to address in the corequisite course.

Assertion 1: Faculty employed a combination of direct instruction, guided practice, and assignment support to respond to the needs of individual students

The MCR 4 corequisite course did not include its own set of curricular or instructional guidelines for the corequisite support course, a notable departure from previous methods of developmental education. Consequently, faculty in the study were free to choose the topics they remediated, as well as the instructional approach they saw fit for a particular circumstance. This assertion overviews the various ways that faculty regularly utilized class time and what these various

activities accomplished. Broadly, classroom activities fell into three categories: direct instruction, guided practice, and assignment support. Each of these categories is visualized in Figure 1 below.

Figure 1. Instructional Methods in the Corequisite Course



Direct Instruction. The first category of classroom activity was for the instructor to utilize the MCR class time to present that day’s QR material again or clarify concepts that students found to be confusing. Direct instruction was more frequently the first activity that took place and took the form of a lecture format with interactive components. Instructors would discuss examples they might not have had time to present in the larger class or re-explain examples they thought deserved revisiting. Usually the direct instruction portion was brief, around five or ten minutes, and would consist in off-the-cuff discussions of concepts, skills, or formulas. Sometimes, Mr. Oates would re-open presentation slides from the lecture for the day’s class to revisit material. During interviews he described this practice as giving “mini lessons” to the students. This direct instruction most often covered the same sections and material from the course that immediately preceded it. At times though, such as before the test or as the final exam approached, instructors reviewed topics from earlier in the unit or earlier in the semester.

Both Dr. Hall and Mr. Oates taught their support classes immediately after their paired QR course, so this offered a natural segue to review that day's material in the smaller format of the corequisite course. For instance, Dr. Hall began one class by summarizing an assignment the students just completed during QR. The assignment directed students to make a spreadsheet in Excel that would compute their grade in the course, based on the weights of each category of assignment and the scores the student had received. While teaching the QR class, Dr. Hall found that students struggled to set up the computation for the weighted average. So, at the beginning of the support class, she presented this computation a second time, working with the students step-by-step to arrive once more at the formula.

In addition to revisiting what they had just gone over in the QR course, faculty would also use the direct instruction in MCR 4 to extend these concepts or present them in alternative ways. Dr. Hall followed the Excel example by asking students about what would happen to their grade if the course were weighted differently, eliciting the idea that the weights had to collectively add to 100% for the process as outlined to make sense. During interviews, Mr. Oates emphasized the importance of not simply re-teaching the same material but using the support class to further explore class concepts. As an example of this from an observation, he started one class by reviewing direct variation, a topic that students had found challenging during the QR course. He presented direct variation in a slightly different way, discussing how the equation of direct variation implied that a ratio between two variable quantities was constant. This strengthened the connections of the concept of direct variation to the other topics in the unit on ratios and proportional reasoning. At some points, these explorations inspired him to bring back ideas into the QR classroom. For example, after he found his MCR students connecting with this alternative explanation of direct variation, he reported taking this explanation back to the rest of his QR students.

The direct instruction was well-suited in instances when a concept from the QR course was particularly challenging and many students shared common confusions. Since both instructors taught the MCR 4 course after their QR course, it was natural for them to begin the class by going over concepts they or their students felt they needed to spend additional time on. However, because of the various strengths and weaknesses of the students, instructors typically refrained from spending more than five or ten minutes at a stretch doing direct instruction. Both Dr. Hall and Mr. Oates expressed a hesitancy towards using the small format lecturing, particularly on remedial topics. When Mr. Oates was asked about which approaches he thought were not useful, he responded that when he taught these remedial topics “like a regular lesson” that it did not offer enough practice for the students. In such instances, he more often used class time to provide guided practice for students, which is discussed next.

Guided Practice. The second way instructors utilized class time was to give students suggested exercises to work on individually or in groups. Guided practice included remedial topics at times when such topics were relevant, but often addressed material identical to that of the QR course. Sometimes, instructors would take examples directly from the instructional software and have the students collectively work on these exercises. At other times, these suggested exercises were reviewed in a worksheet prepared in advance when instructors anticipated students might struggle in a certain topic. At several points during the semester, instructors would share resources they developed specifically for the MCR course with one another. These review materials were also sometimes exercises that were given to the QR class as a whole, but which the faculty did not have time to go over in the QR class. This included test review documents developed by the QR faculty that contained a large list of exercises on each test. In the week before the test, Mr. Oates would often direct students to work on these exercises. Mr. Oates also would revisit tests his students had

already completed to give them the opportunity to revisit concepts they struggled with on their first attempt.

The instructors offered multiple formats for guided practice. In one class at the beginning of the unit on ratios and proportional reasoning, Mr. Oates wrote up ten problems on the board on fraction operations. He had each of his five students complete two exercises on the board and then explain their work to the rest of the class. In many instances, the instructors did not even need to ask some students to explain their work; many of them developed some enthusiasm about sharing their successful methods with other students. Getting students to teach one another was made possible by having students all working on the same or similar content. It also made it easier for the instructor to provide individual support to those who needed it most and to leverage the skills of their better-prepared students to assist with remediation.

At many points, instructors would use the guided practice exercises to launch into direct instruction when they encountered a topic that they thought might benefit the class at large. For example, Mr. Oates chose to have all students each work on the same exercise, one that involved a complicated formula with many potential pitfalls. An advantage of guided practice on the same set of problems was that instructors could easily transition between directing students to work in groups, individually, or as a class. Though instructors could occasionally plan out the topics in advance, in multiple instances they found that the anticipated topics students would struggle in were not the ones that vexed students. When instructors did not have a particular topic they wanted to review, they instead used the support class as a format for providing assignment support.

Assignment Support. The third category of classroom activity was for the instructor to allow students to use MCR class time to complete their assignments for the QR course. Both Dr. Hall and Mr. Oates offered students time for their students, though each instructor adopted different instructional practices to incorporate assignment support. For Dr. Hall, who had a slightly

larger class, assignment support was a regular fixture of the course that would occur after opportunities for direct instruction or guided practice. By contrast, Mr. Oates would spend most classes using a combination of instruction and guided practice. However, on days when he did not a specific topic that he or the students thought necessary to cover, he would dedicate an occasional class period towards providing assignment support.

During assignment support, faculty would allow students to choose which of their QR assignments they wanted to work on. In most instances they work on regular homework assignments, though at points the students also completed “lab” assignments that would apply course concepts within structured scenarios. These lab assignments included, for example, having students compute the amount one would need to pay on taxes under a given scenario. This included sales tax on food, personal property tax (on vehicles), real estate tax, and income tax. The lab assignments also included Excel-based work, such as creating a gradebook they could use to calculate their course grade or constructing a payment schedule for a credit card with a specified balance, as were mentioned earlier. Finally, instructors also allowed students to work on projects, which were broader, open-ended, and often group-based. One of these projects had students research prices for a new and a used car and then compute their monthly payments, amortization schedule, and depreciated value under a set of scenarios for financing options.

What typically took place during assignment support was that instructors would circulate throughout the classroom as students worked on their chosen assignments. Some students gravitated to working in groups, while others preferred to work by themselves. Sometimes students would request assistance by raising hands or calling for the instructor. When instructors were not responding to one of these help requests, they would circulate around the class and monitor the work that students were completing.

Offering assignment support had the advantage of being flexible to student needs. Not all students needed direct instruction or guided practice on a particular topic. Furthermore, some students were further ahead than others, making it more challenging to find a topic that all students were simultaneously struggling on. Working on an individual basis also allowed faculty to see precisely what students struggled in. However, offering support on assignments had its drawbacks as well. It was challenging for instructors to provide one-on-one support for all of their students. Dr. Hall remarked that some of the students, if they had their way, would work with her one-on-one for the entire duration. Since some material was a common struggle among students, reviewing concepts individually was not always the most effective use of time. Unlike guided practice in which instructors prepared examples ahead of time, assignment support required instructors to work out the problems on the spot, so it was more laborious to verify answers. At the end of the semester, Dr. Hall expressed regret at allowing too much time on assignment support, because some students came to expect that they would be able to get their assignments done within the corequisite course.

Both instructors developed their own balance of the three approaches, as Mr. Oates discusses in the following excerpt:

Sometimes I am just pulling some problems from the homework, and I've done that a time or two. I've looked at the first test with them. I've done some of the "backfilling" material. I've done just more examples from a worksheet in class where we didn't get to all of the examples. I think that a little bit of all of those to meet their needs from lesson to lesson depending on how that lesson went over for them is probably what I would continue to do and I think probably is the best.

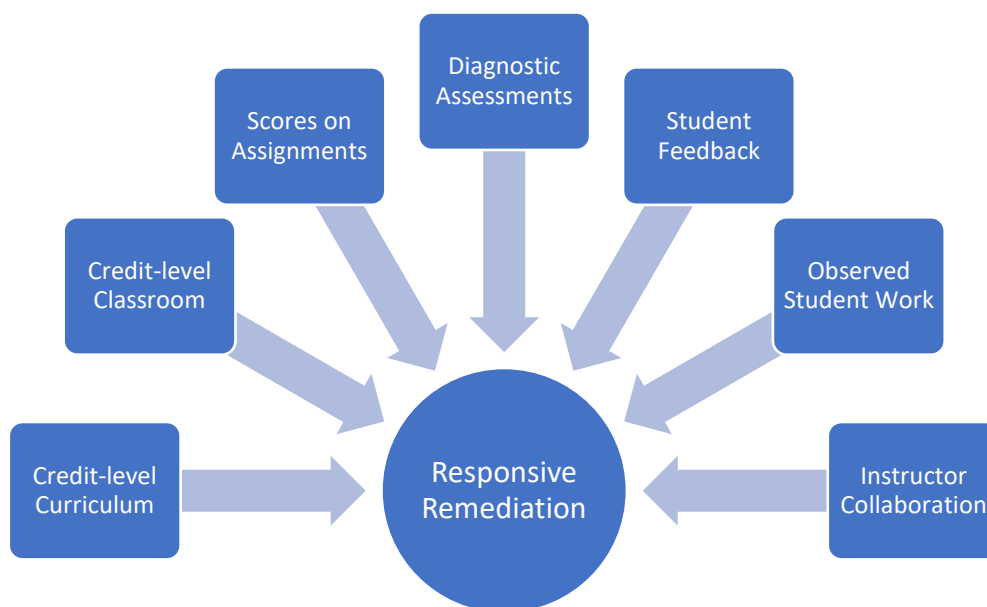
The "backfilling" Mr. Oates is referring to is the practice of reviewing prerequisite content necessary for success in the credit-level mathematics course. Not every unit required reviewing prerequisite material, for instance a unit on logical reasoning included many concepts such as truth values of

statements that did not directly address content from any prerequisite developmental course. Because there was no one-size-fits-all set of topics to cover, instructors had to constantly gather information to determine how to effectively use class time.

Assertion 2: Faculty leveraged a variety of data sources from the curriculum, credit-level classroom, and student feedback to inform their instruction in the support course

Because the MCR course had no curriculum aside from supporting whatever was taking place in the QR course, faculty often devised and revised their plans for the MCR course on short notice. Dr. Hall noted that she planned for the course by “picking out things that [the students] have struggled with or I foresee they’re going to struggle with, but sometimes it’s a last-minute change.” This referred both to the prerequisite foundational gaps students would arrive to class with, as well as the credit-level material that might prove challenging. She and Mr. Oates both incorporated information from a variety of sources to decide upon what material to cover and how. This variety of data sources is visualized in Figure 2 below.

Figure 2. Sources of Information for Responsive Remediation



Credit-level Curriculum. The first source of information that inspired activities in the MCR course was the QR curriculum itself. When faculty were preparing their lessons for QR, they would often anticipate areas in which students would struggle, either because they perceived a new concept as challenging or because it required competency in prerequisite skills. For example, faculty anticipated that students might struggle when working on truth tables, given that it was likely to be a new concept for many students. They also thought the same for more computationally intensive topics, like financial mathematics formulas. Sometimes, in anticipation of these challenges, the instructors would create targeted exercises, like a worksheet on computing annual percentage yield. However, as Dr. Hall noted, she did not always accurately predict which concepts the students ultimately found challenging. Consequently, she supplemented these expectations with her experiences from the QR class itself.

Credit-level classroom. Because the MCR course was scheduled after the QR course that each instructor taught, they had the opportunities to build from their experiences in the classroom. Dr. Hall discussed the value of these classes to bring to light and then address unexpected challenges. She actually taught multiple sections of the QR course, one several hours before her MCR course, and noted how that “luxury” gave her more opportunities to plan for student difficulties. For example, on one day she shared that her students in QR were struggling to solve equations where two ratios were set equal to one another, a topic she had not anticipated as a difficult one. In response, she wrote up a series of exercises to lead students in guided practice in the MCR class later that day.

Scores on Assignments. A related item of student feedback was student performance on assignments, on an individual and a group level. The instructional software would send regular reports to faculty noting the sections of homework on which students were struggling. Mr. Oates used this in part when deciding to review direct and inverse variation during the chapter on ratios

and proportional reasoning. Dr. Hall also would check each of her MCR students' scores on assignments and take time to remind them of the assignments when they ran behind. The small format of the MCR course facilitated this high level of involvement and accountability.

Diagnostic Assessments. During one of his first classes, Mr. Oates gave his students a self-developed diagnostic “quiz” which included a sample of skills on developmental material. This included exercises on fraction arithmetic, evaluating expressions, and solving linear equations. He saw that they performed poorly on it, particularly on the exercises involving fractions. This prompted him to dedicate some of the instructional time early in the course to lessons on fractions. This was the only observed instance of a diagnostic assessment in the MCR course, and both instructors noted that they did not seem to find it particularly helpful. When Dr. Hall gave the same quiz to her students a week later, she reported that she thought it was not very useful. She felt that giving the students this assignment just upset them, because many of them seemed to already be aware that they struggled on these skills. Interestingly enough, though placement data was available on how students placed into the MCR course, neither instructor reported using this data to supplement their remediation practices. Instead, this much more often took the form of simply asking the students themselves.

Student Feedback. Mr. Oates would typically begin his MCR classes by presenting students with three or four options for direct instruction or guided practice. The students would then choose, as a group or individually, which of these options they wanted to take. Mr. Oates explained why eliciting student feedback was important relative to some of the other sources of information:

I try to predict, but much more important than predicting is being comfortable enough with them and them being comfortable enough with you that you can have candid conversations about it. So, instead of me trying to predict, I'm really trying to get input from them.

The excerpt above demonstrates how faculty leveraged the students own perceptions of their strengths and weakness to inform their classroom practices. From Mr. Oates' perspective, this approach of asking students was actually the most valuable, one that is facilitated by a strong rapport with students and the class as a whole. However, both he and Dr. Hall acknowledged that students at times lacked the metacognition to accurately report the nature of their struggles.

Dr. Hall also relied upon student input and began class by eliciting questions from students on recent material from the QR course. At some points, she would come prepared with a particular topic she wanted to revisit because she thought the class as a whole would benefit from additional instruction. At other points, students would offer some suggestions for her to go over. In her assessment, many of her students were eager to spend the support course working on their assignments. However, the assignment support itself was also a valuable source for choosing remediation strategies.

Observed Student Work. Circulating around the room and observing students as they worked individually or in groups had a major impact on how instructors chose the topics to remediate. Sometimes students would raise hands to get attention, other times faculty would walk around and monitor students' progress and intervene when they struggled. Because the instructional software offered two attempts to receive a correct answer on open-ended calculation questions, getting the first attempt wrong frequently provided an opportunity for instructor intervention. This was one apparent advantage of the instructional software, that it was impossible for students to simply request a new version of an exercises and thereby it was in their interest to ensure they received assistance. The design of the software meant that getting an answer wrong could increase the number of correct answers required to complete the assignment. This offered an incentive for students to ensure they arrived at a correct answer, preventing some kinds of "gaming" that the instructors had noted existed with previous systems.

Dr. Hall noted that these individual interactions, typically in the context of assignment support, was the primary way she identified and addressed student misconceptions: “I think it is mostly from working with them individually, that is where I am seeing the deficiencies. I can tell you who in that class knows how to do those things and who doesn’t”. Indeed, the majority of Dr. Hall’s time in the MCR course was spent bouncing from student to student as they ran into issues they were unable to resolve themselves. Dr. Hall would ask these students to explain how they were approaching the exercise, making sure that they were following the appropriate steps by hand on paper and ensuring that they were following along at each step. These individual interactions were a frequent way that instructors identified the specific misconceptions and struggles held by each student that served as a barrier to their success in the credit-level course.

Instructor Collaboration. One last source of information came from the collaborative practices of instructors who shared information with one another. During regular implementation meetings between instructors teaching the QR course, they shared tips and suggestions for what approaches seemed to be effective in their corequisite class. Sometimes faculty would create in-class exercises for their MCR students and would share these resources with other instructors. This sharing was helpful because the instructors often had little time to respond with prepared activities to the confusions and challenges students faced in real-time, making it harder to arrive to the MCR course with appropriate guided practice activities.

Whereas previous prerequisite models employed at CCCC had a fixed curriculum on topics in fractions, decimals, and basic algebra that students needed to demonstrate competency on, the MCR courses could cover whatever instructors or students saw fit. Instructors ended up gathering data to inform their remedial practices from the curriculum, but largely from the students themselves. This included everything from the issues revealed while teaching the QR class as a whole to the performance and suggestions of individual students within the MCR 4 course. Each

piece of information helped to paint a fuller picture of the particular guidance that each student needed.

Assertion 3: Students displayed a wide variety of foundational content gaps and study skills; faculty used the support course to respond to these student needs

Dr. Hall observed that the multiple measures by which students could qualify for the corequisite course led to some instructional challenges. She described this experience of having to address a wide variety of gaps and deficiencies as frustrating both for herself and for students:

Some of them cannot solve linear equations; some of them cannot simplify fractions. But it's frustrating, because some of them can, and can do it very well. I feel bad for them when I spend time on that because they're like, 'Yeah this is boring, I know how to do that,' because their deficiencies are in different areas and some of them are very different in their abilities.

The different ability levels contributed to some amount of reluctance to provide students with exercises focused solely on remedial content. It is important to acknowledge the previous format of developmental instruction at CCCC required students to focus on one remedial content area at a time but did not always adequately prepare students for college-level mathematics (see Beamer, 2020).

In contrast with the previous model of developmental mathematics, lessons in the support course tended to focus on topics from the QR content. However, many students had gaps in their understanding of the content covered in the developmental modules. As revealed during observations and instructor interviews, these gaps included fraction arithmetic, decimals and place value, exponents, order of operations, solving linear equations, and equations of lines.

Arithmetic Issues. Of these, Mr. Oates highlighted fractions as a primary “sticking point” for many of his students. It was the only remedial topic he reported spending a significant amount

of dedicated instructional time towards in the corequisite course. Fractions were embedded throughout the QR curriculum, when working with ratios and proportions, slope, and many of the financial formulas. As part of these problems, students needed to simplify fractions, do arithmetic operations on fractions, and convert between improper fractions and mixed numbers in the context of various applied problems. Instructors leveraged the applied context to provide students a meaningful way to check their answer. Instructors would often emphasize the importance of checking the reasonableness of an answer in an applied context. This contextualization of foundational skills was critical because the foundational prerequisite skills were rarely tested in the QR course outside of a particular application.

The student difficulties with arithmetic operations pointed more generally to the weak numeracy skills of some MCR students. Some struggled with even more foundational concepts of place value – Dr. Hall recounted an example of a student who struggled to understand why $0.35 + 1$ was not 0.351. In multiple observed instances, students appeared to be confused by directions asking to round to the nearest tenth or hundredth, or to the nearest cent. Ability to perform arithmetic operations was critical for the QR course, for example, converting between decimals and percentages when interpreting interest rates. However, a major difference between corequisite instruction and the previous developmental modules was that there were no restrictions in QR on students using calculators. In fact, a scientific calculator was required, and some students chose to use graphing calculators to compute answers or convert between various numerical forms (decimals, fractions, and percentages). Observations revealed that some MCR students were able to successfully complete assignments in QR, even though they turned to calculators for rudimentary computations such as single-digit multiplication or fraction arithmetic. This indicates one other potential reason why more students may be finding success in these supported QR courses: some of

these students may be able to do computations with the assistance of a calculator but struggle to do so by hand.

Algebra Issues. However, there were also skills covered in the developmental modules embedded within the QR material that could not be done with a calculator. Linear equations (e.g., $3x + 7 = 12$) showed up throughout the curriculum, when dealing with proportions, financial formulas, and modeling with lines. Students were often required to solve linear equations within an applied context, such as finding the rate of interest on a loan using the simple interest formula. Many students were also rather unfamiliar with the meaning of slope and working with equations of lines, which were required in the unit on mathematical modeling. As Dr. Hall noted in the earlier quote, these basic algebra skills were a large hurdle for some students. Some of them did not know that dividing by a fraction was equivalent to multiplying by its reciprocal. Though a calculator could help students avoid issues with arithmetic, they were less well-suited to compensating for poor algebra skills.

Issues with Technology. Even when students did understand arithmetic and algebraic principles, some struggled to utilize their technology appropriately. For example, instructors found that students would miss their first attempt on a question because rounded incorrectly. Either students would use a calculator at each step and round mid-way through their solution process, leading to inaccuracies, or students would truncate decimal expressions rather than round. Because the instructional software had little error tolerance for answers, an improperly rounded answer was a frequent source of error. Other students had difficulty using their scientific calculators to properly enter order of operations.

Study Skills. Many students from the MCR courses indeed did struggle with the remedial content as covered in previous developmental structures. However, instructors did not solely focus on building content mastery in the MCR courses. Dr. Hall spent most of her time supporting

students on an individual basis, and frequently took time to address matters not directly related to content knowledge. For instance, many of her students tended to use the calculators on their computers or phones, rather than scientific or graphing calculators that were perhaps better suited to the task. Some students would avoid using pencil and paper, and it took instructor intervention to ensure that students were modeling appropriate solution techniques.

In other instances, the one-on-one instructional format would reveal unexpected roadblocks – for example, a student who was struggling in part because she had strong enough arithmetic skills to solve some proportions in her head. When this approach failed to help her on more complex exercises, she became frustrated as she had not developed the skills to work these by hand. Dr. Hall's intervention allowed the student to help refocus her energy, and it provided Dr. Hall with an opportunity to force additional accountability on her students. Dr. Hall noted that, over the course of the semester, many of her MCR students became more willing to come to office hours when they struggled.

The findings in this assertion connect back to those expressed in Assertion 2 and the expectations among practitioners that it might be possible for these corequisite courses to represent an improvement. To do so, the format needed to be responsive to whatever needs students have, and these were not solely gaps in foundational reasoning. Observational data indicated that faculty spent time coaching and working with students on an individual basis. Given the considerable variation in student ability, this was to some extent necessary. While both Dr. Hall and Mr. Oates admitted that there were ways they could improve, they saw the MCR courses as successful in these ways.

Conclusion

The purpose of this qualitative research design was to analyze instruction within two sections of a corequisite course in order to understand what pedagogical approaches were valuable and why. The research here presents a description of the mechanisms by which instructors within this particular model of corequisite instruction were able to support marginally prepared students. As with the original ALP study in Adams et al. (2009), having a small class format taught by the same instructor and with a subgroup of students appeared to facilitate a number of positive effects. While this present research study cannot offer comparisons between the effectiveness of multiple methods of corequisite instruction, it offers some potential strategies for instructors and valuable elements of corequisite models similar to the ALP.

Responsive Instruction. First, the support that instructors provided responded to the needs of individual students. The small-class format and rapport between student and instructors created an environment in the support class where many students were comfortable with asking their questions. Instructors used the guidance of students to help direct the course in productive ways. In some instances, this meant following student suggestions when choosing topics to review as a class. In other cases, it meant providing suggested exercises on common student struggles, or allowing students time complete assignments in a supported environment. Rather than using placement measures as a proxy of student knowledge, instructors employed their expertise to find and target specific misconceptions and gaps. This dialogic approach ensured an alignment between the developmental support course and the credit-level course, an issue that limited the effectiveness of the previous format. Furthermore, instructors had the opportunity in the support course to address not only content gaps but poor study skills and technology skills.

Integration with Credit-Level Curriculum. One aspect of achieving student buy-in among students was that the activities of the support class directly benefitted their progress in QR. One aspect of this was the fact that remediation was largely embedded within the curriculum of the QR course. Rather than require students to master procedural skills (e.g., fraction arithmetic and solving linear equations) *prior* to encountering a useful application, instructors let the QR content lead students back into foundational skills when necessary. Because this curriculum focused upon solving applied problems, the relevance of these foundational skills was considerably more evident to students. When necessary, instructors would dedicate time to “backfill” these various foundational gaps. Giving students guided practice and assignment support allowed instructors to identify what these specific gaps were.

Accountability and Rapport. Finally, the corequisite course format provided additional accountability to students. This came in multiple forms. At the most basic level, students were required to dedicate at least two hours outside of the QR class to working with the course material. Though these students may have sought out assistance without the class, having the support course lowered the barriers to ask for help. Within the support course, students had opportunities to ask questions and try to explain their reasoning with the instructor and their peers. In some instances, the small format encouraged a certain amount of camaraderie and solidarity among peers. It also made it easy for instructors to follow up with students and ensure their individual needs were being met. The rapport and individual attention were made possible by the small class sizes and by working with the same instructor as the QR class. Ultimately, the aggregate course grades of the MCR students in this study were slightly lower than those of their directly-placed peers, but two-thirds of the MCR students received a grade of C or better in their credit-level course (see table 1 below).

Table 1. Grade Distribution in MTH 154 among Non-MCR and MCR students

Grade	Non-MCR students	MCR students
A	11 (17.2%)	1 (5.6%)
B	22 (34.4%)	5 (27.8%)
C	17 (26.6%)	6 (33.3%)
D	7 (10.9%)	2 (11.1%)
F	7 (10.9%)	4 (22.2%)

The findings point to the conclusion that, in these two cases, the support course was an effective form of remediation that enabled marginally prepared students to succeed in credit-level mathematics. For more detailed analysis and findings, refer to Beamer (2019).

Future Directions. There are several future directions for research on the implementation of corequisite courses. First, because corequisite remediation is dependent on credit-level context, further research is needed into the necessary skills for other gatekeeper courses such as SR or precalculus. Additionally, longitudinal research, particularly for students beginning in algebraically-intensive programs of study, will provide insights into whether students starting in corequisite instruction are able to be successful beyond their gatekeeper course. Finally, more large-scale quantitative analysis comparing the effectiveness of various implementation practices is merited. Such research would be beneficial for comparing the effect of alternative models, such as having larger corequisite classes, separate instructors, online models, alternate placement measures, the impact of corequisite models on disadvantaged groups, and so on. Carrying out this research is critical to understanding how to successfully implement corequisite solutions to challenges that have plagued developmental education for decades.

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Coping and Suicide Among At-Risk Community College Students

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Coping and Suicide Among At-Risk Community College Students

Laura E. Martin and Lynn Bohecker

The authors investigated the complex relationships of coping associated with suicide risk among community college students. Survey responses were obtained from 733 participants. A multiple linear regression demonstrated that maladaptive coping such as self-distraction, substance use, and denial were predictive factors of suicide among students in the 18–29 age group. Self-distraction and denial were significant coping protective factors of suicide risk for students aged 29–67. Implications for increasing suicide awareness and prevention in education are discussed.

College is supposed to be a time of new beginnings and ideas. For many U.S. students, however, this transition to college is heightened by vulnerability that puts them at risk of increased mental health issues, including suicide. The frequency and severity of mental health issues among college students have increased in recent years (Gallagher, 2014; Conley et al., 2020; Eisenberg et al., 2016). Twelve percent of college students reported that they considered suicide in 2018 (American College Health Association [ACHA], 2018). Suicide is a crucial issue facing students and administrators as the second leading cause of death among college-aged students (Hedegaard et al., 2018). The current study investigated the complex relationships of coping and stress associated with suicide risk among 733 community college students.

Factors Related to Adolescent and Young Adult Suicide

The suicide rate jumps significantly in young adulthood and varies by gender. The proportion of men to women who complete suicide is between 4:1 and 5:1 (Liotta et al., 2015). Women make more suicide attempts and use methods such as overdosing that increase survival rates (Liotta et al., 2015). Men tend to attempt suicide in more violent ways that lead to immediate death. Among young adults aged 15–24, suffocation accounts for nearly three-quarters of suicides among women, while firearms are the most common means of suicide among men (Hedegaard et al., 2018).

The rates of suicidal ideation are similar for both groups: 3.5% for men and 3.9% for women (Han et al., 2014).

Students of color, first-generation students, LGBTQ students, international students, and students from low socioeconomic status (SES) backgrounds face unique mental health burdens and barriers to care. LGBTQ adolescents attempt suicide at a rate triple that of their straight peers (Hottes et al., 2016). Barriers to help seeking in this population include feelings of hopelessness, substance use disorders, low self esteem, and stigma (National LGBT Health Education Center, 2018). The rate of suicide also varies by level of educational achievement. Individuals under 25 with a high school education die by suicide at double the rate of those over 25 with a college degree (Phillips & Hempstead, 2017).

Spirituality and Religion

Religious beliefs may be an important coping strategy for young adults. Exploring the behaviors, values, and opinions of Millennials regarding religion is an integral part of understanding the generation. Young people today are less likely than their parents and grandparents to be affiliated with organized religion. A quarter of the Millennial generation members do not identify with any faith at all and are often described as “nones”. Twenty-seven percent of Millennials say they attend worship services at least once a week compared with 41% of adults aged 30 and older. Similarly, fewer than 50% of people under 30 engage in daily prayer compared with more than 69% of older American adults (Pew Research Center, 2015).

Millennials affiliated with a particular religion are more intensely dedicated to that particular faith than individuals in previous generations. Millennials who identify with a specific faith generally consider themselves *strong* members of their faith bodies. However, Millennials generally consider themselves more spiritual than religious (Pew Research Center, 2015). Spirituality is perceived as

warmer than religion and is associated with love, inspiration, wholeness, depth, personal growth, and meditation. Millennials are also more willing to talk about subjects such as homosexuality, abortion, and evolution than their elders (Pew Research Center, 2015). Studies in the educational context have demonstrated a significant relationship between religiosity and students' substance use (Singleton, et al., 2004; Bahr & Hoffman, 2008; Wells, 2010). One study reported that at least for college students, *friends* are a more significant influencer on substance use than one's own level of religiosity, meaning religion was not a protective factor for substance use (Abbot et al., 2019).

Drug and Alcohol Use

When considering risk factors for suicide, those who use drugs and alcohol are especially vulnerable. Known for the disinhibition effects, substances are a popular coping mechanism among young adults. Indeed, alcohol abuse among college students has historically been of particular concern for campuses across the nation. Bachrach and Read (2017) examined the relationship between alcohol abuse and stress among college students, finding a direct relationship between significant stress and drinking.. Specifically, another study of 1100 undergraduates reported that college students who regularly consume high quantities of alcohol are more prone to suicide (Lamis, Malone & Jahn, 2014). Legal intoxication (individuals with blood alcohol concentrations of .08% or higher) account for 22% of deaths by suicide (Pompili, et al., 2010), revealing those who have an alcohol dependence are 10 times more at risk for suicide than the general population (Wilcox, Conner, & Caine, 2004).

A growing number of college students use drugs such as Adderall, an amphetamine prescribed to treat attention-deficit/hyperactivity disorder. Adderall is thought to increase a person's focus and allow them to stay awake longer, making it desirable among college students trying to

cram for exams or party longer (Jardin, Looby, & Earleywine, 2011). For these reasons, the authors, therefore emphasize that treating drug and alcohol use is key to reducing suicide rates.

Community College Students

While all college students must learn to navigate the transition to college, the challenges facing community college students are unique. Many community college students are first-generation college students, which disadvantages them in many ways. Generally speaking, first-generation students have lower academic aspirations (Pike & Kuh, 2005) and are less likely to persist and graduate (Swanson et al., 2017) than other students. Many delay entry into higher education.

SES is another factor affecting the success of community college students. Lower retention rates have been found among community college students from lower SES backgrounds (Cohen & Brawer, 2003; Eagan et al., 2015). Students from lower SES backgrounds often work more hours off-campus than students from higher SES backgrounds and thus have less time for studying (Lohfink & Paulsen, 2005). Community college students are less likely than other students to remain in school. One study found that eight years after starting college, 43% of community college students had dropped out (Shapiro et al., 2012). Adapting to the rigor of college, forming new peer relationships, financial struggles, and the unavailability of needed classes are the top reasons students leave (Bowman, et al., 2019; Carter, et al., 2013).

Many Millennials are embracing community college. Nearly half of all undergraduates attend community college (American Association of Community Colleges [AACC], 2016). Community colleges are economically viable options, offering students diverse programming while allowing the students to stay local, making the decision easy for many students.

However, not enough community college students finish what they start (AACC, 2016). Only 29% of students who began pursuing an associate degree at a two-year institution in 2010

completed that degree (National Center for Education Statistics, 2016). There are a few main reasons why students drop out. Given the high cost of college, many students are unable to afford tuition; some find that the stress of balancing tuition and the demands of a job becomes too much. Academic difficulties are also a variable. Some students do not find success in their coursework, which leads to discouragement and withdrawal (Bowman, et al., 2019; Carter, et al., 2013). Others leave because of life changes that cause hardship: marriage, the birth of a child, or the death of a parent. Part of helping students navigate the challenges of college is providing them with tools that permit the development and revision of goals in the context of current data. Stuart et al. (2014) suggested that community colleges must “find concrete ways to increase students’ college–career alignment—the connection between students’ college experiences, career goals, and their employment opportunities” (p. 12).

Mental Health Services on College Campuses

In the span of several years, there has been an increasing realization that college students are in need of more mental health services. While 63% of U.S. college students report feeling anxiety, depression, and stress, the highest levels of anxiety occur during the transition to college (ACHA, 2018; Conley et al., 2020). Research has demonstrated more college students are accessing services with increasingly serious issues that impact their ability to be academically and socially successful (Francis & Horn, 2017; Hardy et al., 2011; Hunt & Eisenberg, 2010). In a recent survey, 1 in 10 reported attempting suicide, 1 in 3 indicated that they take psychiatric medication, 1 in 4 reported self-injuring, and 1 in 3 indicated having experienced a traumatic event (Center for Collegiate Mental Health [CCMH], 2019). As the severity and complexity of student mental health problems grow, it will become increasingly important for college counseling professionals to be prepared to work with

campus departments and healthcare professionals to create an appropriate systemic response to students' needs.

Another survey regarding the mental health of college students found that in the past two decades, the number of college students presenting with clinical depression and suicidal tendencies has quadrupled (Reetz, et al., 2016). Given that college counselors work closely with students throughout their college journeys, they must be equipped to identify when a student's mental health becomes a risk factor for a crisis. Another study offered similar findings, concluding that mental health is a significant concern for U.S. community college students (Eisenberg et al., 2016). Researchers found that nearly half of community college students have experienced a mental health condition ranging from anxiety and depression to suicidal ideas, self-injury, or an eating disorder (Eisenberg et al., 2016).

Concern about students' mental health needs is on the rise (Schwartz & Kay, 2009; Hunt & Eisenberg, 2010). While it is clear that students are suffering, the situation is compounded by the fact that most students with mental health issues are not receiving adequate help (Gallagher, 2014; Wood, 2012). Decreasing financial support, few counseling professionals, and the stigma and common misperceptions associated with mental health are reasons for the lack of adequate treatment of students with mental health concerns (NHMA, 2010). Without sufficient mental health services on college campuses, students' campus life experience and academic performance are affected (Wood, 2012). Meeting students' mental health needs should be a top priority for college communities (Wood, 2012) and administrators should be concerned about students' mental health because mental health is linked to retention, enrollment, and academic achievement.

The Present Study

A growing body of literature has reported the vulnerable transitional period during college when individuals are at risk of mental health concerns, including suicide. Spirituality and religion may be important for positive coping while studies have shown drug and alcohol use is on the rise for negative coping for college students dealing with stress. An increasing number of students are choosing to attend community colleges, many of which do not have mental health resources to meet student needs. There is a dearth of literature on how college students cope with mental health symptoms and even less that is focused on community college students at risk of suicide. Thus, our primary research question was, “What are the coping tendencies among community college students at risk of suicide?”

Method

A convenience sampling method was used to recruit participants. The registrar’s office at a large East Coast community college sent an email to enrolled students requesting their participation in this study. The response rate for this study was 20%. The anonymized online survey (i.e., participants’ student identification numbers were encrypted) included information about the university's mental health resources and the phone number for a national suicide hotline. The college's institutional review board approved this study.

Participants

Participants younger than 18 years old were excluded from the study. The sample consisted of 733 students and demographic data is show in Table 1. Given the considerable focus on the alarming rates of suicidal ideation and attempts among college students, several additional Likert questions were included in this study. Students were asked about their personal history with suicide

in the past year. Six students responded that they had attempted suicide in the past year (0.8%), 67 students responded that they had seriously thought about committing suicide in the past year (9.2%), and 22 students had made a plan for attempting suicide in the past year (3.0%).

Table 1 Demographic Characteristics of Participants (n = 733)

Characteristic	<i>n</i>	%
Gender		
Male	181	24.7
Female	550	75.0
Age		
18-28	416	56.7
29-39	177	24.1
40-67	141	19.2
Ethnicity		
Caucasian	615	77.5
African American	93	11.7
Hispanic	97	12.2
American Indian	23	2.9
Asian	38	4.8
Middle Eastern	7	1
Pacific Islander/Hawaiian Native	7	1
Other	52	6.5
Living arrangements		
With parents or guardian	320	43.7
Off-campus	318	43.3
Other	92	12.6
First-generation college student		
Yes	389	49
No	404	51
Religion		
Christian	527	66.5
Jewish	9	1.1
Muslim	16	2.0
Buddhist	21	2.6
Hindu	8	1.0
Atheist or agnostic	101	12.7
Prefer not to answer	111	14.0

Measures

Patient Health Questionnaire 9

Depression and suicide ideation were measured using the Patient Health Questionnaire 9 (PHQ-9), a 9-item instrument based on the DSM-V criteria for depression. The PHQ-9 is a free and easily accessible assessment that can be found at this link:

<https://www.med.umich.edu/1info/FHP/practiceguides/depress/phq-9.pdf>. This instrument asks a respondent to indicate the frequency of various symptoms over the past two weeks and follows the standard scoring to diagnose major depression. Suicide ideation was operationalized using the ninth question of the PHQ-9: “Thoughts that you would be better off dead or of hurting yourself in some way.” The PHQ-9 has been shown to have high internal consistency in college students' surveys with a Cronbach's alpha of 0.84 (Spitzer et al., 2006). The PHQ-9 is also a valid instrument. Meta-analyses have demonstrated that the PHQ-9 has sensitivity from 77% to 80% and specificity from 92% to 94% for diagnosing major depression. The PHQ-9 has been validated as internally consistent, and results are highly correlated with diagnoses by clinicians in multiple age groups and racial/ethnic groups (Eisenberg et al., 2011).

Brief-COPE

The Brief-COPE assessment (Carver et al., 1989) is used to examine how individuals respond when confronted with difficult or stressful events in their lives. This assessment is a free and easily accessible assessment that can be found at this link:

<https://local.psy.miami.edu/faculty/ccarver/sclBrCOPE.phtml>. The Brief-COPE includes questions such as “I express my negative feelings” and “I turn to work or other activities to take my mind off things.” Overall, the scale measures positive reframing, social support, and instrumental support. This measure has 28 questions. Respondents respond to the questions using a 4-point

Likert scale with the following options: 1 (*I usually don't do this at all*), 2 (*I usually do this a little bit*), 3 (*I usually do this a medium amount*), and 4 (*I usually do this a lot*). The Brief-COPE scale has 14 subscales, four of which were used in this study: religion, denial, self-distraction, and substance use.

Religion

To address the research questions, participants were asked two questions related to religion, one on the Brief COPE and the other on the demographic survey. The two questions were (1) How important is religion in your life and (2) What is your religious affiliation? The importance of religion was measured using a 5-point Likert scale with the following responses: 1 (*very important*), 2 (*important*), 3 (*neutral*), 4 (*unimportant*), and 5 (*very unimportant*). The importance of faith was dichotomized as 1 (*very important* and *important*) or 0 (*unimportant* and *very unimportant*). Students who responded 3 (*neutral*) to this question were excluded.

Results

Suicide appears to be a prevalent issue among college students. The mean score on the PHQ-9 for the total sample was 7.10 ($SD = 5.59$), a score corresponding to mild depression. Slightly over 8.1% ($n = 60$) scored in the moderately severe depression range (scores 15–19) and 3.3% ($n = 24$) had PHQ-9 scores indicative of severe depression (scores 20–27). Twenty-three (3.3%) students answered “yes” when asked if they had made a plan for attempting suicide in the past year. Also, 68 (9.3%) students reported that they had seriously thought about attempting suicide in the past year. Altogether 12.6% of students indicated that they had seriously thought about or made a plan for suicide in the past year.

Coping tendencies help individuals respond when they are confronted with difficult or stressful events in their lives. Self-distraction had the highest mean among the various coping

tendencies of 4.71 ($SD = 1.49$). The mean score for religion on the Brief-COPE scale was 4.46 ($SD = 2.25$). The mean score for denial was 2.79 ($SD = 1.34$), and the mean score for substance use was 2.43 ($SD = 1.12$).

To address the research question, a multiple linear regression was run on two groups according to age to predict the risk of suicidal behavior based on the coping tendencies of self-distraction, denial, and substance use. A significant regression equation was found for the 18–28 year old students, $F(4,362) = , p < .000$, with an R^2 of .159. The individual predictors were examined further and indicated that self-distraction ($Beta = .119, t(2.329) = p = .020$), denial ($Beta = .101, t(1.974) = p = .049$), and substance use ($Beta = .304, t(5.984) = p = <.05$) did significantly predict risk of suicidal behavior. Religion did not significantly predict the risk of suicidal behavior ($Beta = -.064, t(-1.325) = .186$).

Using the enter method for participants who were 29 years old and older, a significant regression equation was found, $F(4,277) = , p < .000$, with an R^2 of .069. The individual variables were examined further. Self-distraction ($Beta = .137, t(2.261) = .025$) and denial ($Beta = -.122, t(2.015) = .045$) were found to be significant coping tendencies of suicidal behaviors. Religion ($Beta = -.082, t(-1.406) = .161$) and substance use ($Beta = .101, t(1.679) = .094$) did not significantly predict values of reported of suicidal behavior.

Discussion

Counselors are crucial to student success at all levels college. This study provides information for college counselors to stay current on mental health trends and better understand the landscape of mental health among college students so that they can better prepare, educate and treat students who are at risk for suicide. This research opens the door to discussions between counselors and parents, students, and college personnel to maximize efforts to treat students' mental health

issues proactively before tragedy strikes. That way, professional counselors can refine their skills and talents to recognize the coping tendencies to identify students who may be at risk. Moreover, our study focuses on the important but relatively understudied population of community college students.

When we examined the individual contributions of the variables in our multiple regression, we generally found that substance use was the most significant predictor of suicidal behaviors in college students who were 18–28 years old and that self-distraction was the most significant coping tendency for college students who were 29–67 years old. When we examined the frequency of substance use, we looked at both questions related to substance use. The first question asked, “I’ve been using alcohol or other drugs to make myself feel better” ($M = 1.24, S.D. = .622$), and the second question asked, “I’ve been using alcohol or other drugs to help me get through it” ($M = 1.20, S.D. = .554$). Interpreting the beta coefficient for this factor, we can see that substance use contributed to 30.4% of the model for students who were 18–28 years old. The role of substance use is critical to explore in future work because it is possible that some students who use this coping tendency frequently or severely are in a self-perpetuating cycle in which alcohol or drug use impairs their mood and functioning. This impaired functioning increases one’s susceptibility to suicide. Another concerning result of this study is that substance use had the highest mean for any of the maladaptive coping tendencies (including those not included in this survey but included on the Brief-COPE scale). Substance abuse is often long-lasting and reoccurring and has lifelong consequences for one’s emotional, physical, and mental well-being. This begs the question of many college counselors: Which came first: Significant alcohol use or suicidal behaviors?

Based on questions from the PHQ-9, students in both age groups who were at risk of suicidal behaviors also cited denial as a significant coping factor (saying to myself “this isn’t real” and “I’ve been refusing to believe that it has happened”). One possible explanation for using denial

amid stress is that it gives individuals time to adjust to the stressful or difficult situation they are facing. Denial delays the individual's need to tackle challenges by protecting the person from accepting the truth about something that has happened. For example, college students may deny that they are failing classes or struggling to cope with the adjustment of living away from home. Using denial as a means to cope can interfere with at-risk students' treatment and the ability to seek support.

Students in both age groups who were at risk of suicidal behaviors also cited self-distraction as a significant coping factor (saying to myself "I've been turning to work or I've been doing something to think about it less, such as going to movies, watching T.V., reading, daydreaming, sleeping, or shopping" and "I've been refusing to believe that it has happened"). This study suggests that behaviors that previously may have been perceived as ways to procrastinate are now known coping tendencies that act as protective factors for students who are at risk of suicidal behaviors. Self-distraction refers to the effort to attend to less disturbing aspects of a situation selectively. Students benefit when they redirect their energy from an upsetting emotion or challenging event and engage in a preferred activity such as shopping or going to the movies. When individuals are stressed or overstimulated with fear or anxiety, self-distraction triggers changes in areas of the prefrontal cortex that allow the brain to relax substantially. A college setting offers myriad opportunities for students to self-distract. Extroverted students may self-distract by enjoying a social event or a sporting outing, whereas introverted students may self-distract by attending a play or reading. Parents or teachers may think that self-distracting behaviors put students at risk of behaviors that hinder success. For example, sleeping too much or too long may interfere with academic success. However, these results demonstrate that these behaviors, which were once viewed as impeding academic success, may be healthy coping tendencies for students with psychological concerns. Students may recognize that their mental health status has deteriorated and intentionally chose to

self-distract as a way to ward off suicidal behaviors. Students who use self-distraction as a coping tendency may be preserving their energy for facing future obstacles. Feeling overwhelmed is the most common stressor among college students. The message of this, if heeded, is valuable: Separating from external stressors is a self-management strategy with cascading effects. This study demonstrates that students' efforts to cope with the stressors of college life are thereby adaptive coping tendencies.

Religion was not a significant individual contributor to the model for any age group. This is a notable finding because this is counter to what previous studies have found. This study's data suggest that suicide knows no boundaries or limitations on those who perceive religion as very important in their lives.

Limitations

Several limitations of this study are worth noting. First, the sample size was limited to one college with multiple campuses spread across a large geographic area. It is difficult to assess the impact of regional differences on the results and generalize them.

A second limitation stems from the anonymity utilized during the survey process. Although all of the measures of the PHQ-9 and Brief-COPE scale are well known and commonly used in research, they are also all self-report measures. Although self-report measures may be the most practical approach for measuring sensitive topics such as mental health or academic success and failure, they are subject to response bias.

Implications

These empirical findings have important clinical implications for understanding how Millennial college students cope and for examining their help seeking behaviors. As professional

counselors know, college students have many competing demands on their time: Heavy course loads, social activities, and homework assignments consume a significant amount of time. For many students who are undecided about seeking professional help, a lack of time, and the inconvenience of the scheduling process may be variables they consider as barriers. As such, the ways students cope informs the clinical services they receive.

These current findings confirm that students' unmet mental health needs are a significant barrier to succeeding at college. Students often turn to school personnel as a first option when mental health concerns first arise. Despite increased national attention to college students' mental health, the landscape of clinical services provided on college campuses has changed and not necessarily for the better. This study can provide insight into the metamorphosis that has occurred in the college counseling world. Gone are the days where college counseling centers provided students with moral and vocational guidance or character development skills. Centers now include consultation, case management, teaching, training, supervision, assessments, outreach and prevention services, career planning, crisis and emergency services, and more depending on the needs of the institutions with which they are associated. The level of services is often dictated by the size of a given center's budget, the number of employees who work at the center, and the type and size of the associated institution (e.g., vocational/technical college, community college, four-year university), as well as institutional priorities. At most institutions, counseling staff are increasingly tasked with serving on committees that receive, evaluate, and act on reports of student behaviors that cause concern among faculty, staff, and administrators. Therefore, the context for counseling services at higher education institutions is exceedingly complex and not designed for a one-size-fits-all approach.

To address the range and volume of services needed, counselors should consider opportunities to integrate mental health promotion and prevention into their overarching systemic

outcomes. Having programs to address needs beyond counseling, such as poverty and food insecurity, would a way to capture more students for proactive treatment. Additional investments in student mental health might include suicide prevention programs in which all staff members and students are trained to screen for suicide ideation and suicidal behaviors.

Recommendations for Future Research

The study reveals a variety of possibilities and recommendations for future research concerning Millennials and college success. Improving our understanding of Millennials and their mental health on college campuses is extremely important in an era of limited economic resources and growing demand for counseling services.

First, it is necessary to replicate the current study with a sample size inclusive of other community colleges to increase generalizability. The current study identified the subgroup of students at risk for suicide or suicidal ideation, and their lifestyle behaviors and values warrant additional attention. Moreover, an examination of barriers to help-seeking among community college students with an elevated risk of suicide students has yet to be completed. Such an examination would expand our knowledge of the unique needs of Millennial college students.

Conclusion

Because mental illness among college students continues to be a significant academic and social issue, this study strengthens and extends strategies to forge greater treatment efficacy. The data collected in the current study may provide the opportunity to improve suicide prevention on college campuses, primarily as society seeks to invest in young people's lives through the pursuit of well-being. While further research is needed to understand other psychosocial factors that may contribute to suicide and suicide ideation, this study emphasizes the need to identify and address

predictive tendencies among students at risk of suicide on community college campuses. Upon future research and continued collaboration, those who serve college students will be able to advance a comprehensive mental health platform to reduce and prevent suicidal behaviors.

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Negotiating a New Blend in Blended Learning: Research Roots

Laura Fuller

Blended learning has a muddled history but is still evolving. Technological innovations and the COVID-19 pandemic of 2020 led higher education to create a new blend to blended learning, one that did not follow the generally accepted and most numerous definitions or previous examples of blended learning. This new blend of blended learning lacks the physical environment and face-to-face instruction and consists of all computer-mediated instruction in the form of both asynchronous online instruction and synchronous instruction via videoconferencing and computerized webinar tools. This arrival of a new blend of blended learning requires educators to develop and implement a new instructional mode. This paper aims to assist educators with their pursuit of effective strategies for the successful design and implementation of this new blend of blended learning by providing an overview and discussion of how research on blended learning may be interpreted and applied to equip educators to be more prepared to design and to implement their own new blend of blended learning courses. The origins of distance learning, the development of blended learning, blended learning's links to technological development, the ambiguity of terminology referring to these learning forms, and the advantages and drawbacks of blended learning are presented through a review of published research.

Education changes as society changes. Consequently, the methods and practices used in education have adjusted dramatically throughout the centuries (Christensen et al., 2011a; Ervin, 2019). With the COVID-19 pandemic of 2020, virtually all of society transformed, and education is adapting in response. This current reshaped educational culture has yet again modified the higher education learning context leading to the innovation of a new blend in blended learning, one that is a mixture of online asynchronous with online synchronous utilizing the videoconferencing and webinar tools, such as Zoom. In response, educators continue to pursue information for effective instructional practices to engage students in the learning process (Christensen et al., 2011a; Ervin, 2019).

Although education has always been called upon to make shifts, adjustments are not necessarily natural or always effectual. The disruptive innovation theory of Christensen et al. (2011a) referenced the catalyst for these necessitated innovations as *disruptions* and cautioned that they are “difficult because the definitions and trajectories of improvement change” (p. 44). However, Christensen et al.’s theory also suggested that specific procedures were available for

predictable success in innovation. Assisting educators with the pursuit of effective strategies for the successful design and implementation of this new blend of blended learning by providing an overview and discussion of how research on blending learning may be interpreted and applied is the purpose of this paper.

The relevance of this pursuit for effective utilization of this new blend of blended learning is a natural assumption as the ramifications of education ripple throughout society. However, the immediacy of the implementation of the new blend in an educational format without strong existing research regarding effectiveness demands careful and purposeful review and crafting of intended teaching strategies. Deschacht and Goeman (2015) remarked that while scholars and educators “believe blended learning holds the potential to make higher education more attractive, accessible and effective for adult learners,” research studies on the effects of blending learning on higher education students’ performance are insufficient, and the debate on the effects of blended learning on student retention and performance has not been resolved (p. 84).

Moreover, the sheer numbers of students and faculty being potentially affected by this transitional blend amplifies the significance of implementing this educational mode with conscious awareness of the best practices. In 2018 in the United States, nearly seven million higher education students (35.6% of all students at degree-granting postsecondary institutions) were enrolled in distance learning courses (U.S. Department of Education, National Center for Education Statistics, 2018). Approximately 17% of these distance learning students were enrolled in fully online courses, while the other approximate 18% took at least one online course (U.S. Department of Education, National Center for Education Statistics, 2018). Due to definitional ambiguities with the terms *blended learning*, assessing the exact number of United States higher education students who would be impacted by this new blend in blend learning is impossible. However, Dzuiban et al. (2018) referenced that in 2008, 35% of United States higher education institutions offered blended courses,

and 12% of the 12.2 million students enrolled in distance learning were in blended courses.

Projections indicate that distance/online learning will continue to grow (Ervin, 2019), supporting the importance of educators understanding how to effectively employ all forms of distance learning for the benefit of student instruction.

Defining Blended Learning

Part of the challenge of addressing educational strategies for effective implementation of this new blend in blended learning arises from a lack of an accepted definition for blended learning (Andrews, 2020; Picciano, 2019; Poon, 2013). What was once a clear line between traditional face-to-face and distance education has been blurred by the rise of hybrid/blended learning (Miller et al., 2017).

Attempts have been made to construct a definition of blended learning. Miller et al. (2017) defined blended learning as “the delivery of education through a combination of instructor- and technology-led instruction,” but they indicated that no guidelines exist for how much education is delivered by technology versus in person (p. 4). For the various learning modes, Allen and Seaman (2016) suggested blended learning be defined as having 30-79% online instruction, face-to-face be constructed of 0% - 29%, and online consist of 80% or more.

Even the root of development for blended learning is debated as some researchers have seen its evolution from hybrid learning, and the terms of *hybrid* and *blended* are often used interchangeably (Miller et al., 2017; Yamagata-Lynch, 2014). Other researchers have viewed blended learning as arising from face-to-face and distance/online learning modes (Poon, 2013). Still, others have claimed that blended learning resulted from distance education without influence from traditional face-to-face education (Aoki, 2012).

Generally, blended learning has had recognized association with distance learning, and divisions between the two are frequently blurred in research. The beginnings of distance learning

date back to the early 18th century (Kentnor, 2015). Distance education's first formalized program began in 1873 by Anna Ticknor, who formed a "network of women teaching women by mail" called the Society to Encourage Studies at Home (Bergmann, 2001, p. 447). The first widely offered and quite successfully enrolled distance education program was provided by the University of Chicago in 1892 (Kentnor, 2015). From these beginnings, the development of distance learning can be viewed in five generations (Taylor, 2001). Aoki (2012) attributed generational visualization due to "the evolving use of technologies" (p. 1184).

The first generation, the Correspondence Model, utilized asynchronous with no interactivity learning to geographically separated instructors and learners with mainly print technology and postal services (Aoki, 2012; Taylor, 2001). This generation ended in 1960 (Andrews, 2020). The Multi-media Model, the second generation, utilized the technologies of print, audio, and video (Taylor, 2001). This second generation, with its use of print materials with radio and television as instructional media, was able to reach mass audiences worldwide (Aoki, 2012). This generation, lasting approximately 25 years, remained asynchronous with geographically separated instructors and students (Andrews, 2020). The third generation, the Telelearning Model, applied telecommunication technologies to offer the first synchronous distance learning (Taylor, 2001). This generation has been divided into two time periods of 1985-1995, representing the introduction of personal computing, and 1995-2005, exhibiting the launch of Internet learning (Andrews, 2020). Both audio and videoconferencing were utilized, allowing content delivery and interactivity among students and instructors (Aoki, 2012). The fourth generation of online instruction via the Internet is titled the Flexible Learning Model (Taylor, 2001) and allows "personalization of content depending upon learners' learning preferences" (Aoki, 2012, p. 1185). Taylor (2001) asserted that a fifth generation was emerging due to newer technologies. This Intelligent Flexible Learning Model, a derivative of the fourth generation, utilizes the interactive nature of the Internet, such as Web 2.0 (Aoki, 2012).

This generational history review of distance/online learning reveals the third generation allowed learning asynchronously, synchronously, or as a combination of both, which resulted in the potential for the emergence of blended learning.

Additionally, some of the difficulty with establishing a definition of blended learning arises from its close connection to technology. If blended learning is defined by the technology utilized in its implementation, then its definition and instructional methods must change as technology evolves (Andrews, 2020). Miller et al. (2017) indicated that new technologies had required new terms for emerging educational modes of distance learning. Hence, since technology continues to develop into new forms, the name and design of blended learning also display a tendency to change, contributing to some of the ambiguity of educators and researchers in understanding it.

Despite the varying claims of its origin, blended learning is broadly recognized as “some combination of virtual and physical environments” (Poon, 2013, p. 274). Graham et al. (2005) defined blended learning as combining face-to-face instruction with computer-mediated instruction. Picciano (2019) stated that “blended learning is perceived as some nebulous combination of online and face-to-face instruction” (p. 8). However, in 2020, the new blend of blended learning represents a diversion from what has previously been defined as blended learning. The new blend of blended learning consists of all computer-mediated instruction in the form of both asynchronous online instruction and synchronous instruction via videoconferencing and computerized webinar tools; the physical environment and face-to-face instruction are absent.

A lack of a clear and stable definition of blended learning, the inability to differentiate the contributions of the various learning formats, the novelty of its emergence during a disruption in worldwide society, and its continual evolution due to its linkage to technology further complicate educators’ efforts to effectively utilize this new blend of blended learning for productive student learning. Acknowledgment of this challenge came from Cheng and Chau (2016), who indicated that

blended learning could be composed of different combinations with some effective and some ineffective. One suggested approach came from Andrews (2020), who posited that educators must consider the type or combination of blended learning being utilized. Consideration of how the blended learning format integrates these four dimensions should be involved in their evaluation: physical space (F2F vs. computerized); time (asynchronous vs. synchronous); fidelity (media vs. text), and humanness (human vs. machine) (Graham et al., 2005; Andrews, 2020).

Investigation into the generational picture of distance learning also allows a view of some of the confusion with the determination of the origins of blended learning and a preferred approach to its effective implementation. Some researchers indicated that face-to-face learning and online/blended learning were equivalents (Demirer & Sahin, 2013). Some researchers stated that online/blended learning was not as effective as face-to-face learning (Xu & Jaggars, 2014). Other researchers have claimed that blended learning exceeds face-to-face learning (Tseng & Walsh, 2016). Nevertheless, a point of consideration in the studies is what is actually being measured and how. As in the contemplation of any research, the study and its findings need to be carefully reviewed. For example, in Tseng and Walsh's (2016) study, the results were determined by students' self-reports. The results were that the students *reported* "significantly higher overall learning motivation," and the students *reported* "higher levels of learning outcomes," yet the final grades between the blended courses and the face-to-face courses had no significant difference (Tseng & Walsh, 2016, p. 50). The presence of conflicting research reports further complicates an educator's pursuit of effective implementation of this new form of blended learning.

The determination of what would be sufficient learning theories to apply to blended learning is also debated. As blended learning was emerging, the scholarly thought was that the theories of learning that applied to face-to-face learning could also explain distance learning (Andrews, 2020). As cited in Andrews (2020), Keegan (1986) advocated the need for a specific theory for distance

learning, which contributed to Simonson's (1999) equivalency theory. The equivalency theory states "distance education's appropriate application should provide equivalent learning experiences for all students - distant and local - in order for there to be expectations of equivalent outcomes of the educational experience" (Simonson, 1999, p. 7). Simonson stated that distance learning and local learning are "*fundamentally* different, even when interactive technologies are used" (p. 7). However, even though the learning experiences may be different, they should be equivalent, and the location of the learners should not mean that any learner should have "different, possibly lesser, instructional experiences" (Simonson, 1999, p. 7).

Bernard et al. (2004) continued research with the equivalency theory's premise of relative effectiveness and the nature and extent of the impact on essential outcomes and concluded that "methodology and pedagogy are more important than media in predicting achievement" (pp. 379, 399). The theory has been further advanced by the work of Dell et al. (2010), which concluded that to achieve equivalent outcomes, "methods of instruction are more important than the delivery platform" (abstract). As an educator is designing and implementing this new blend of blended learning courses, the challenge of bringing all of these aspects of research, debate, theory, history, and association will inform design.

Research on Blended Learning

Utilization of research into blending learning assists educators with their creation of informed design for and implementation of the new blend of blended learning. However, research will not reveal a clear-cut path to the successful implementation of a blended course with effective instructional practices to engage students in the learning process. The earlier discussions of this paper clearly indicate the muddled paths by which blended learning has arrived in higher education. Additionally, discerning in research which study is based on online learning or blended learning is difficult as

terms, such as *distance learning*, *online learning*, and *blended learning* are not necessarily used with much specificity. Studies of higher education environments also do not necessarily define their populations well, and confusion can exist with classifications of collegiate students and adult learners. Furthermore, Christensen et al. (2011a) warned that the many variables in delivery methods of online learning make conclusions about effectiveness difficult. However, with consideration of these cautions, research can be a worthwhile contributor to educators revealing the advantages, drawbacks, and research-supported approaches to blending learning.

Advantages

In general, many scholars and educators support blended learning's potential of making higher education "more attractive, accessible and effective for adult learners" (Deschacht & Goeman, 2015, p. 83). In much of published research, the themes of convenience, flexibility, and popularity recur regarding the advantages of blended learning. Deschacht and Goeman (2015) reported the convenience of blended learning for students who are combining jobs, family, and education, who live in remote areas, or who have specific learning needs. The reduced classroom contact hours with study materials, assessments, and coaching delivered online are conveniences for learners (Deschacht & Goeman, 2015). Distance learning allows students the convenience of determining the setting in which they learn best (Kentnor, 2015). Poon (2013) listed flexibility as a leading factor in students' preference for blended learning. According to Christensen et al. (2011), ample research on online learning worldwide supports its popularity. Owston et al.'s (2013) research claimed the benefits of flexibility, efficiency, convenience, and learner engagement and found that high achieving learners were more satisfied with the blended learning environment than low achieving students. High achievers found blended learning more convenient and engaging, felt they learned course concepts better than in face-to-face courses, and would prefer to take a blended

course again; low achievers were least satisfied, least likely to take another blended learning course, and preferred face-to-face learning (Owston et al., 2013).

Other advantages attributed to blended learning are presented in the research. Andrews (2020) reported that students who prefer blended learning appreciated more time for processing and reflecting upon the course content. Ervin (2019) suggested that students valued blended learning's opportunities for personalization of their learning. Other students, according to Ervin, prized the accessibility factor of blended learning. Christensen et al. (2011b) claimed learners who are not able to physically attend on-campus classes or have financial barriers preventing commuting or living on campus benefited from blended learning's accessibility. Furthermore, from a higher education institution's viewpoint, Maloney et al. (2015) claimed cost savings of blended learning over face-to-face learning.

Some studies found multiple perspectives when comparing blended learning to face-to-face learning. For example, Andrews (2020) reported that some research showed no difference in competency between the two groups of students, but the rate of satisfaction of blended students was significantly higher. Spanjers et al. (2015), however, found students were equally satisfied with both learning types. Student satisfaction is an often-mentioned advantage of distance/blended learning (Andrews, 2020; Deschacht & Goeman, 2015; Kintu et al., 2017; Reissman et al., 2015; Willging & Johnson, 2009). Studies across a span of years indicate that interaction, either instructor to student or student to student, contribute to high student satisfaction in distance learning (Arbaugh, 2000; Eom et al., 2006; Garrison & Kanuka, 2004; Kintu and Zhu, 2016; Kintu et al., 2017; Abou Naaj et al., 2012; Swan, 2001). Student satisfaction becomes an important contributor to course completion. Wilging and Johnson (2009) named student satisfaction in online/blended learning as a strong factor for its effectiveness. Deschacht and Goeman (2015) suggested that students' satisfaction is a crucial element in reducing dropouts in blended learning.

Some studies showed both advantages and drawbacks to blended learning. For instance, Deschacht and Goeman (2015) found blended learning led to higher exam scores and slightly higher course pass rates but did not improve the course persistence of certain students. The researchers aptly reminded readers that the positives of the study need to be viewed with the following consideration: If more students drop out, the remaining learners (those who continued) may have been better students, and, accordingly, without the dropout students' low scores, the exam results and pass rate have been skewed. Hence, the effects of blended learning may be overestimated if only exam scores are investigated (Deschacht & Goeman, 2015). A complete review of the studies should be conducted as educators are considering both the advantages and drawbacks of blended learning. With knowledge of the advantages, educators understand what works well with blended learning and can edify those strengths in their courses. A review of the drawbacks is also useful to educators as they are preparing their courses.

Drawbacks

Research reports drawbacks to blended learning as well. The first consideration is a reminder that since there are so many blends to distance education, not all varieties are effective (Koch & McAdory, 2012). As with the review of research on the advantages of blended learning, educators must look carefully at the many variables of a study and be cognizant of the muddled history, terminology, and varying formats of blended learning. Student retention is often cited as a drawback to distance learning (Deschacht & Goeman, 2015; Xu & Jaggars, 2014). Higher education blended learning courses have a higher dropout rate than face-to-face courses (Andrews, 2020; Deschacht & Goeman, 2015). The reasons are many, but the research provides educators with areas to address in their course design and implementation.

Chyung (2001) reported that students drop out because their interests and the course structure do not match or because they lack confidence in a distance learning environment. Students have to adjust psychologically to teaching differences (Szeto & Cheng, 2016). Furthermore, Kintu et al., (2017) listed “one big challenge” in blended learning is how to be sure learners can successfully use technology as “users getting into difficulties with technology may result in abandoning learning” (p. 1). System functionality may lead to either success or failure as poor quality in technology destroys user satisfaction, but quality technology positively affects satisfaction (Kintu et al., 2017). An indicator of success in blended learning is the user’s continued navigation through the technology of the learning management system (Kintu et al., 2017). If the user can effectively use the learning management system and its various tools, then learning outcomes improve, but a lack of computer skills causes failure (Kintu et al., 2017).

Additionally, the use of some of the technology is still developing and lacks conclusive research on effectiveness and best practices. Computer-mediated communication (CMC) in the form of computer conferencing has been gaining popularity since the last century as Garrison et al. (1999) presented in their study on its more common use in higher education. The new blend in blended learning utilizes CMC in the form of videoconferencing and webinars through Zoom, a desktop video conferencing service, to take the place of what has previously been the face-to-face component in blended learning. However, practitioners, writers, and associations are advocating that a phenomenon named Zoom fatigue is affecting users of the Zoom platform. Unfortunately, the phenomenon is so new that scholarly research is lacking, but some media sources have printed information. For instance, the American Heart Association and Zoom Video Communications, Inc., published “a multi-facet strategy to combat burnout and address mental wellbeing” to address the “concern over virtual fatigue” (Press Release, 2020, para. 1, 6). Kobie (2020) published an article in *PC Pro*, acknowledging the problem. Wiederhold (2020) reported on the new phenomenon that

researchers and journalists have begun calling “Zoom fatigue.” Even though researched information is not yet available, educators should be aware of this technological downside.

Another drawback suggested in research is the overloading of learners (Andrews, 2020). The demands of blended learning should be considered in course design as well as the students’ perceptions of the course’s work. Spanjers et al.’s (2015) study reported a negative effect size for investment, which meant that students perceived blended learning to be “more demanding and/or less appropriate with regard to the required investments compared with more traditional learning” (p. 69). Spanjers et al. concluded that although their research had some limitations, it did support the assertion that Sitzmann et al. (2006) found, which suggested that blended learning may be more demanding than face-to-face learning. The researchers also asserted, however, that the investment of more time, effort, and work in the blended course might have been a contributing factor in the studies’ concluding that blended learning had higher effectiveness (Sitzmann et al., 2006; Spanjers et al., 2015).

In addition to the student considerations, blended learning instruction is a new or different experience for many instructors. Andrews (2020) stated that instructors must adjust a face-to-face course in order to blend it with an online component. Some instructors were found to be unsure about how to modify their classes for the blended environment (Freeman & Tremblay, 2013). Purposeful design, including working with an instructional designer, and transformation of teaching are supported in research (Capra, 2014; Szeto & Cheng, 2016). Additionally, Koch and McAdory (2012) indicated that sometimes there is resistance to the teaching of blended instruction by instructors who feel classroom presence is what makes a difference in teaching. Others resisted moving to blended learning as they felt that reviewing online activities was too much loss of in-class teaching or felt online components contained too much extraneous information (Freeman &

Trambley, 2013). Both parties of students and instructors need to be considered in the design and implementation of this new blend of blended learning.

Concluding Charge to Readers

Higher education institutions and educators continue to adapt to the changing needs of society. Innovations, such as those created by new technology, as well as disruptions, such as the COVID-19 pandemic of 2020, modify the modes of learning instruction. Increased reliance on more computerized technology and mobility restrictions due to the pandemic have created a new blend of blended learning. Unlike the vast majority of previous forms of recent blended learning that utilized a mixture of face-to-face and online delivery, this new blend is entirely computerized, but not exclusively asynchronous online learning. This new blend is partially asynchronous online delivery and partly synchronous instruction via computer-mediated communication of videoconferencing and webinars via tools such as Zoom, a desktop video conferencing service. This paper aims to assist educators with their pursuit of effective strategies for the successful design and implementation of this new blend of blended learning.

Gaining an understanding of the muddled history of blended learning and developing an awareness of its advantages and drawbacks equip the higher education practitioner with knowledge for course design and implementation of this new blend of blended learning. A review of some of the research of distance learning in order to more fully understand blended learning reveals the ambiguity with and sometimes simultaneous use of terms, such as *distance*, *online*, *blended*, *e-learning*, and *hybrid* to refer to similar or the same instructional methodology. Additionally, the higher education practitioner utilizing research must scrutinize studies to ascertain applicability for his or her instructional needs. For instance, in the research studies, settings should be considered as some might be corporate, as the corporate arena began to use computers for educational purposes during

the 1980s while higher education did not begin online courses until the early to mid-1990s (Kentnor, 2015). Additionally, studies have varied populations from elementary to graduate students.

Distance learning has a recognized history of approximately 300 years (Kentnor, 2015), although others such as Keegan (2014), as cited in Andrews (2020), will argue that its use existed centuries ago dating to biblical times through the letters of Apostle Paul. The rapid growth of distance learning, however, began in the late 1990s with online technology's influence (Kentnor, 2015), and eventually birthed blended learning with online components. To understand the breadth of blended learning, an educator should view research from the last approximate 20 years. Blended learning is not static; with its continual association with evolving technology, each new reiteration of educational technology affects blended learning and researchers. "Innovative pedagogical approaches through the use of technology in teaching and learning" are necessities, according to Kintu et al. (2017), for a worthwhile blended learning environment (p. 18). To effectively design and implement blended learning, practitioners should meld learner characteristics, design features, and learning outcomes (Kintu et al., 2017). In order to be aware of the pedagogy, technology, options, outcomes, and other qualities for good blended learning design and implementation, research is needed. Kentnor (2015) offered that to improve the quality of education educators provide, they need to "investigate and understand the progression and advancements in educational technology and the variety of methods used to deliver knowledge" (p. 22). Informed with a span of research about blended learning, educators are more prepared to design and to implement their own courses in this new blend of blended learning.

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Gender Differences in Community College Psychology Students' Cooperative Learning Experiences: A Qualitative Analysis

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College Students' Perceptions of the Cooperative Learning Process

Christopher Arra

The goal of the study was to assess the effects of gender on college students' perceptions of the cooperative learning process. Ninety-five college students completed 5 open-ended questions that asked students about their preferences for cooperative learning activities. Fifty-one female and 44 male students participated in the study. Utilizing qualitative research design, the study compared responses to the five questions across genders. The principal investigator analyzed data to identify themes, frequency of response, percentage of response, and emergent categories. Some qualitative findings were that male and female students prefer the same type of group work, and male and female students both agreed that providing rewards and full group participation are ways of making group work more enjoyable.

Cooperative learning activities are used in classrooms from elementary school through college (Johnson & Johnson, 2009), with college students reporting having a variety of different cooperative learning experiences during their primary and secondary education (Arra, Shuaib, & McGarry, 2014). Therefore, upon entering college, students have been exposed to a wide variety of cooperative learning activities (Arra, Shuaib, & McGarry, 2014). This exposure invariably makes students more comfortable with certain cooperative learning activities that they may wish to continue using in college (Arra, D'Antonio, & D'Antonio, 2011).

Purpose of the Study

The present study investigated college students' perceptions of the cooperative learning experience by gender. Many studies have been conducted that examine students' preferences for different types of cooperative learning activities, and several studies have been conducted that examine students' perceptions of the cooperative learning process. A handful of studies have even looked at college students' perceptions of the cooperative learning experience, but scant, if any attention has focused on gender and perceptions of cooperative learning activities. Furthermore, there is little research that specifically evaluates college students' perceptions of the cooperative

learning process using a qualitative research design. Therefore, the present study attempted to inform educators by analyzing the cooperative learning process from the perspective of the college student and to extend this nascent field. The goal of the researcher was to answer the following two questions and respond to the additional prompts by gender:

- 1) What are the advantages of working in groups?
- 2) What are the disadvantages of working in groups?
- 3) Describe specific types of group work/activities that you like.
- 4) Describe specific types of group work/activities that you do not like.
- 5) Describe ways to make group work more enjoyable.

Literature Review: Cooperative Learning

Robert Slavin (1994) defines cooperative learning as an instructional program where students work in small groups to help each other master academic content. In this way, when the group succeeds, everyone in the group succeeds (Bishnoi, 2017). Slavin (1994) also suggested that cooperative learning has the potential to capitalize on the developmental characteristics of students. In this way, these techniques capitalize on students' desires for peer orientation, expressions of independence, and social enthusiasm. Additionally, McKinney & Cook (2018) identified two types of cooperative learning. Formal cooperative learning is structured and is used to achieve group goals and informal cooperative learning incorporates group learning with passive teaching. Finally, Elliot and Reynolds (2014) suggested that cooperative learning is fun for students and that they also support each other's learning.

The use of cooperative learning strategies in American school's dates back to the 1950's. The rationale, proposed by James Coleman (1961) was that cooperative learning activities reduced competition in schools. Competition amongst students was viewed as a negative component of the education system. Instead, Coleman suggested that a more cooperative approach to teaching would discourage competition in academic settings which effectively impedes the process of education.

While theorists such as Coleman began establishing the tenets of cooperative learning theory in the 1950's, modern theorists David Johnson and Roger Johnson head the Cooperative Learning Center at the University of Minnesota. The center focuses on making classrooms and schools more cooperative places by teaching cooperative skills, leadership, and communication. Johnson and Johnson identified that cooperative learning promoted skills within the group including better communication, mutual liking, and high acceptance and support (Johnson and Johnson, 1975). Subsequently, Johnson and Johnson (2007) identified the 5 elements for effective group learning. These elements are positive interdependence, face-to-face orientation, individual accountability, processing, and social skills (Johnson and Johnson, 1994). Brandl, Schneid, Smith, Winegarden, Mandel, & Kelly (2017) expanded on these ideas by suggesting 8 key elements to cooperative learning: teacher supervision, heterogeneous groups, positive interdependence, face-to-face interaction, individual accountability, social skills, group processing, and evaluation.

According to Johnson, Johnson, and Smith (2007), cooperative learning has two components: social and academic. The social aspect of cooperative learning can be very exciting for students who enjoy this element of the activity. The academic learning can therefore flow more easily as it is cloaked by the social interaction. Johnson and Johnson (2007) also stated that cooperative learning is based on social interdependence theory. In this way, cooperative learning

activities are tied to theory. Teachers appreciate and prefer to implement interventions that are not only empirically-supported, but also tied to theory. It can be said that theory drives practice.

Literature Review: Student Perceptions of Cooperative Learning

Several studies have been conducted that assessed students' perceptions of the cooperative learning process. Marks and O'Connor (2013) administered a survey to college students to determine their attitudes about cooperative learning activities in the classroom. Results showed that students saw cooperative learning as a positive experience but did not necessarily prefer it to individual assignments. Students also questioned instructors' motivations for using group work.

Sarobol (2012) investigated university students' perceptions of group work in the classroom. Ninety-five first-year university students were assessed. Findings suggested that most students preferred group work to traditional instruction, and that most students also viewed group work in a positive light. Another study by Chiriac and Granstrom (2012) also looked at university students' perceptions of cooperative learning activities. Two hundred-ten university students participated in the study. Results showed that students saw group work as an activity that facilitated learning, had a social function, and that the group must be well organized with both male and female members. Additionally, students reported that a lack of group structure could lead to a low degree of satisfaction with group work.

Hillyard, Gillespie, and Littig (2010) conducted survey-based research with undergraduate students. They found that bad group experiences led to long-lasting, negative attitudes about group work.

Du, Ge, & Xu (2015) looked at African-American females' perceptions of the cooperative learning process. This study employed a qualitative methodology as the participants in interviews

containing open-ended questions. The results indicated that the participants preferred to work in racially mixed groups and that they viewed cooperative learning as a learning activity not a social one. In another study, Opdecam, Everaert, Keer, & Buysschaert (2014) studied undergraduate Accounting students. For this study they compared group learning and lecture-based learning. Results indicated that female students had a higher preference for group work compared to male students. Additionally, they found that students who preferred group work were more help seeking, more intrinsically motivated, had less control of their learning beliefs, and were more willing to share their knowledge with their peers. Interestingly, they researchers also found that engaging in group work resulted in increased performance as compared to lecture-based learning.

Literature Review: Gender diversity and its effect on attitudes about Cooperative Learning Activities

A study by Cheng, Shui-fong, and Chan (2008) looked at heterogeneous groups and self-efficacy. The results indicated that group heterogeneity and group gender composition did not affect students' reports of self-efficacy. Another study by Ding, Bosker, & Harskamp (2011) looked at the influence of gender and gender pairing on student learning performance in group work. The results of the study indicated that in mixed-gender dyads participants ideas tended to diverge from each other. Additionally, females in single-gender dyads outperformed females in mixed-gender dyads.

Hansen, Owan, & Pan (2015) examined how group diversity affects group work performance. For their study they collected data in an undergraduate management course. Results indicated that male-dominated groups performed worse in their group work and learned less.

Another study by Harskamp, Ding, & Suhre (2008) assessed cooperative learning activities in an undergraduate physics course. The findings indicated that males benefited most in mixed-gender group activities, and that the females in the group devoted less time to seeking solutions and spent more time asking questions than their male partners.

Prinsen, Volman, & Terwel (2007) looked at computer-supported collaborative learning in the college environment. They found that male dominance occurs with more frequency in collaborative learning groups, and that to mitigate those findings the groups should be gender-balanced. Additionally, gender-balanced groups help to mitigate gender-stereotyped participation and communication patterns. A study by Kaenzig, Hyatt, & Anderson (2007) examined gender differences in undergraduate business classes. The qualitative results of the study indicated that, overall, females group experiences were negative. They stated that there was a male or two in each group that did not participate, and some females tried to join all female groups to avoid this problem. Additionally, the females reported that they did not like their grades being controlled and determined by others, and that it was difficult to schedule meeting times due to group members' work and social obligations.

Cannon, Cannon, & Breen (2013) assessed competitive cooperative learning activities in an undergraduate chemistry class. The researchers administered surveys to the students. Results indicated that female responses regarding subject interest, competition interest, and competition usefulness were more positive than their male counterparts. Finally, Sarobol (2012) examined cooperative learning preferences in an English Language class. The participants completed reflective journals and the data were analyzed qualitatively. Results indicated that students preferred cooperative learning activities over lecture-based learning.

Methodology

Participants

A total of 95 students participated in the study. The participants were first- and second-year students from a community college in the Mid-Atlantic region of the U.S. Fifty-one women and 44

males, ranging from 18 to 63 years of age with an average age of 21, participated in the study (see Table 1). There were 21 Caucasian, 12 Asian-American, 13 African-American, 31 Hispanic, 5 Middle-Eastern students, 1 Pacific Islander, and 12 Mixed/Other participants. The students agreed to participate in this research study.

Measures

Five Open-Ended Questions

Five open-ended questions were also administered (see Appendices). The use of open-ended questions allowed respondents to give exact answers to questions without being forced into picking the closest representation to their actual response. The researcher also used open-ended questions as a way of allowing the respondents to “vent” or add information, comments, or opinions.

Additionally, the use of open-ended questions by the researchers generated facts, opinions, and insights from the participations.

Procedure

The 5 open-ended questions were administered to the students by the principal investigator. Students volunteered to complete the questions and were not penalized if they chose not to participate.

Data Analysis

The 5 open-ended questions were first analyzed by pattern coding. This type of ‘low-level’ coding seeks to find patterns in the data and use these patterns as the basis of coding. The first round of coding also looked at deviations from patterns or atypical responses. These responses were labeled

as outliers and discarded. The codes were then reviewed and combined into ‘high-level’ codes that included both themes and emergent categories. Themes were also broken down into subthemes. The data were also analyzed for frequency of response and percentage of response. The principal investigator also attempted to identify relationships between themes and emergent categories. Finally, conclusions were developed as the principal investigator attempted to find explanations from the data.

Limitations and Future Research

There are several common limitations of qualitative research. First, the quality of this type of research—as compared to quantitative research—is heavily dependent on the skills of the researcher. Also, the interpretation and discussion of the findings may be influenced by the perspective of the researcher, thus causing a bias in the results.

For the current study, areas of future research include the investigating the ‘tentative conclusions’ listed below as they provide a basis of exploration.

Results

First Research Goal

What are the advantages of working in groups?

Eighty-seven student responses, or 92% of the total responses, were analyzed for the first probe (see Table 2). Forty-four responses were from female participants and forty-three responses were from male participants. Three categories emerged from the female responses. These categories and response percentages were Getting to Know People (74%), Learning New Things (82%), and Getting the Project Completed Quickly (71%).

Three categories emerged from the male responses. These categories and response percentages were Provides Me With Study Partners (73%), Develops A Person's Social Skills (89%), and You Get A Well Rounded Perspective (69%).

The principal investigator also attempted to identify relationships amongst the categories and between gender. Female participant responses had both social and academic response patterns. Female participants indicated that "Learning New Things" and "Getting The Project Completed Quickly" were important academic aspects of group work. They also indicated "Getting To Know People" as an important social aspect of group work.

Male participant responses had both social and academic response patterns. Male participants indicated that "You Get A Well-Rounded Perspective" were important academic aspects of group work. They also indicated "Provides Me With Study Partners" and "Developing A Person's Social Skills" as important social aspects of group work.

Attempts to find explanations from the data are listed discussed in the *Conclusions* section of the paper.

Second Research Goal

What are the disadvantages of working in groups?

Eighty-five student responses, or 89% of the total responses, were analyzed for the second probe (see Table 3). Forty-two responses were from female participants and thirty-nine responses were from male participants. Three categories emerged from the female responses. These categories and response percentages were Not Everyone Participates (97%), Conflicting Viewpoints (78%), and Not All Students Like Working in Groups (73%).

Three categories emerged from the male responses. These categories and response percentages were People Stop Paying Attention (82%), Quality Of The Work Varies (65%), and Not Everyone Participates Equally (92%).

The principal investigator also attempted to identify relationships amongst the categories and between gender. Female participant responses had both social and academic response patterns. Female participants indicated “Conflicting Viewpoints” as an important academic aspects of group work. They also indicated social reasons stating that “Not Everyone Participates Equally” and “Not All Students Like Working In Groups” as important disadvantages of group work.

Male participant responses had both social and academic response patterns. Male participants indicated that “Quality Of The Work Varies” as an important academic aspect of group work. They also indicated social reasons stating that “People Stop Paying Attention” and “Not Everyone Participates Equally” as important disadvantages of group work.

Attempts to find explanations from the data are listed discussed in the *Conclusions* section of the paper.

Third Research Goal

Describe specific types of group work/ activities that you like.

Ninety-one student responses, or 96% of the total responses, were analyzed for the third probe (see Table 4). Fifty responses were from female participants and forty-one responses were from male participants. Two categories emerged from the female responses. These categories and response percentages were Group Projects (78%) and Group Presentations (80%).

Two categories emerged from the male responses. These categories and response percentages were Group Projects (71%) and Group Presentations (75%).

The principal investigator also looked for relationships among the categories and between the genders. In this case, both male and female participants reported preferences for the same types of group activities. Both men and women enjoyed group projects and group presentations. It is interesting to note the rather basic types of group activities that they preferred. It could be that as students in elementary and secondary school, they were not exposed to other types of group work like jigsaws and think-pair-share activities.

Attempts to find explanations from the data are listed discussed in the *Conclusions* section of the paper.

Fourth Research Goal

Describe specific types of group work/ activities that you do not like.

Ninety-three student responses, or 98% of the total responses, were analyzed for the fourth probe (see Table 5). Fifty-one responses were from female participants and forty-two responses were from male participants. Two categories emerged from the female responses. These categories and response percentages were Science Group Work (68%) and Group Papers (51%).

Two categories emerged from the male responses. These categories and response percentages were Science Group Work (62%) and Learning Teams (49%).

The principal investigator also attempted to identify relationships between the categories and gender. It is interesting to note that both male and female students did not prefer Science Group Work. However, differences between gender were also found. Female students reported not liking Group Papers and male students did not like Learning Teams. It is certain that male and female students are exposed to a variety of group activities during their schooling, and that observation is evidenced here.

Attempts to find explanations from the data are listed discussed in the *Conclusions* section of the paper.

Fifth Research Goal

Describe ways to make group work more enjoyable.

Ninety-three student responses, or 98% of the total responses, were analyzed for the fifth probe (see Table 6). Fifty responses were from female participants and forty-three responses were from male participants. Four categories emerged from the female responses. These categories and response percentages were Being Able to Select A Leader (52%), Provide Rewards (48%), Allow Students To Choose Their Own Group Members (61%), and Everyone Participates (70%).

Four categories emerged from the male responses. These categories and response percentages were Respecting Other People's Opinions (64%), Make All Group Members Accountable (49%), Provide Rewards (62%), and Everyone Participates (69%).

The principal investigator also attempted to identify relationships amongst the categories and between gender. Both male and female students identified Providing Rewards and Everyone Participates as common categories. Female participants indicated Being Able To Select a Leader and Allowing Students to Choose Their Own Group Members as important categories. Male participants indicated Respecting Others' Opinions and Making All Group Members Accountable as significant categories.

Attempts to find explanations from the data are listed discussed in the *Conclusions* section of the paper.

Conclusion

The current study provided much information regarding cooperative learning activities by gender. The present study analyzed the data by gender and many interesting results were found. It is apparent that male and female participants view group work in both similar and differing ways.

Male and female students had differing responses regarding the advantages of working in groups. The female participants emphasized getting to know group members and efficiency of project completion while male participants indicated the development of social skills and getting a well-rounded perspective as advantages of group work.

The second probe asked participants about the disadvantages of group work. Female participants indicated conflicting viewpoints and lack of participation by all group members as disadvantages. Their male counterparts suggested that group members stop paying attention and that the quality of the work varies. Both genders indicated lack of participation by all members as a significant concern.

Next, the participants were asked to report the types of group work they preferred. Interestingly, both groups of participants reported similar findings. Both male and female participants preferred group projects and group presentations. The following probe asked participants which group activities they did not like. Female participants reported science group work and group papers. Male participants also reported science group work as an activity that they disliked. Male participants also indicated that they did not like learning teams.

Finally, the participants were asked to report ways of making group work more enjoyable. Female participants reported being able to select a leader as an important criterion. Male participants reported respecting others' opinions as an important criterion. Interestingly, both genders indicated rewards and having all members participate as ways to make group work more enjoyable.

Finally, the principal investigator attempted to find explanations from the data. Several conclusions emerged from the data analyzed in the current study. Data collected from the ninety-five participants in this study indicated that participants shared the following experiences:

1. Male and female participants reported different advantages of group work.
2. Male and female participants reported different disadvantages of group work.
3. Male and female participants preferred the same types of group work: group projects and group presentations.
4. Male and female participants agreed in disliking Science Group Work.
5. Male and female participants also reported disliking different types of group work.
6. Male and female participants both agreed that providing rewards and full group participation are ways of making group work more enjoyable.
7. Male and female participants also reported different ways of making group work more enjoyable.

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Appendix

Table 1

Descriptive Statistics of the Participants

Total Number of Participants	95
Female	51
Male	44
Ethnicity	
Caucasian	21
Asian-American	12
African-American	13
Hispanic	31
Middle-Eastern	5
Pacific Islander`	1
Other	12

Table 2

Advantages of working in groups by gender.

Emergent Category	Frequency	Percentage
Female		
Getting To Know People	32	74%
Learning New Things	36	82%
Getting The Project Completed Quickly	31	71%
Male		
Provides Me With Study Partners	31	73%
Develops A Peron's Social Skills	38	89%
You Get A Well-Rounded Perspective	29	69%

Table 3

Disadvantages of working in groups by gender.

Emergent Category	Frequency	Percentage
Female		
Not Everyone Participates Equally	40	97%
Conflicting Viewpoints	33	78%
Not All Students Like Working In Groups	30	73%
Male		
People Stop Paying Attention	32	82%
Not Everyone Participates Equally	25	65%
Quality Of The Work Varies	36	92%

Table 4

Specific Types Of Group Works That You Prefer—By Gender.

Emergent Category	Frequency	Percentage
Female		
Group Projects	39	78%
Group Presentations	40	80%
Male		
Group Projects	29	71%
Group Presentations	31	75%

Table 5

Specific Types Of Group Works That You Do Not Prefer—By Gender.

Emergent Category	Frequency	Percentage
Female		
Science Group Work	35	68%
Group Papers	26	51%
Male		
Science Group Work	25	62%
Learning Teams	20	49%

Table 6

Ways To Make Group Work More Enjoyable-- By Gender.

Emergent Category	Frequency	Percentage
Female		
Being Able To Select A Leader	26	52%
Provide Rewards	24	48%
Choose Your Own Group Members	31	61%
Everyone Participates	35	70%
Male		
Respect Others' Opinions	28	64%
Everyone Participates	30	69%
Make All Group Members Accountable	21	49%
Provide Rewards	27	62%

5 Open-Ended Questions

Age_____ Gender_____ Ethnicity_____

1. What are the advantages (pros) of working in groups?
2. What are the disadvantages (cons) of working in groups?
3. Describe specific types of group work/activities that you like.
4. Describe specific types of group work/activities that you do not like.
5. Describe ways to make group work more enjoyable/effective in the classroom.

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If you have any questions, please contact Tom Geary, Managing Editor, at tgeary@tcc.edu.