

Understanding the Biopsychological Effects of Trauma on Learning:
An Investigation of Interventions to Support Faculty

By

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Submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Higher Education, Leadership Management, & Policy

Seton Hall University

October 2019

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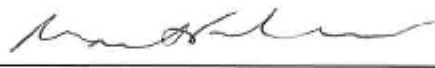
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Joan A. Buzick has successfully defended and made the required modifications to the text of the doctoral dissertation for the **Ph.D.** during this **Fall Semester 2019**.

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Dedication

So many people have encouraged me and understood my absence in their lives.

Thank you for your love, respect, and support.

This dedication belongs to Dr. Nora Krieger.

Her gentle but impelling spirit started me on this road.

She continues to be a beacon guiding me on my life's path.

Acknowledgments

I am extremely grateful to Dr. Martin Finkelstein. He truly has the gift of understanding.

Onward! is his motto, and onward I go. Thank you, Dr. F!

I appreciate my committee advisors,

Dr. Richard Blissett, for his knowledge, his hours of reading, and his thoughtful comments,
and Dr. Mitra Shojania Feizabadi, for her comments and encouragement.

Thank you,

Dr. Amy Hoch. I appreciate your expertise

and the time you gave freely to share very important information.

Lindy Judd, MSW, LCADC, thank you for stepping in.

A special appreciation goes to

Dr. Mary Balkun who, as Director of the Center of Faculty Development, demonstrated
her dedication to the success of Seton Hall University students.

Thank you to all my professors and the supporting staff in the
Education, Leadership, Management, and Policy program at Seton Hall University.

I have gained much from your knowledge and through observing your kindness.

Thank you to the faculty who willingly participated in this research study.

Your participation demonstrated your concern for students.

Lastly, thank you to my fellow students with their kind words and for our discussions.

We all have taken risks and are moving forward!

Abstract

The current era in higher education has brought changes to the academic profession. Faculty have an increasing number of responsibilities in addition to their traditional role as an instructor. At the same time, faculty are engaging with a changing and diverse student population. The population has more challenges, with increased stressors, than have been historically observed in higher education students. For many, the stressors are trauma-related and are a growing concern. Trauma has been shown to impact cognitive, social, emotional, and physical well-being. What has been learned about trauma is, to a great extent, a result of the relatively recently emerged science of biopsychology. Biopsychological information has become an integral component in trauma-informed faculty development programs. While the perception is that these programs are effective, it is not known whether biopsychological knowledge could inform faculty understanding of student behaviors and whether faculty believe this new science could inform their teaching practices. The purpose of this study was to assess faculty knowledge and their attitudes and beliefs about practices as they pertain to the effectiveness of biopsychological knowledge related to trauma and to determine whether a trauma-informed workshop could effectively deliver this knowledge. The study also sought to understand the key factors necessary for facilitating these trauma programs.

The results of this investigation indicate that faculty lack knowledge about the biopsychological effects of trauma on learning. Presenting a trauma-informed workshop was effective in increasing faculty knowledge and their belief that biopsychology can inform teaching practices. Faculty who attended the workshop had favorable attitudes prior to attending. Faculty indicated that time was the primary factor in impeding or inhibiting participating in trauma-informed programs.

Table of Contents

Approval for Successful Defense	iii
Dedication	iv
Acknowledgments	v
Abstract.....	vi
Table of Contents	vii
List of Tables	x
List of Figures.....	xi
CHAPTER I: INTRODUCTION	1
Background.....	1
Purpose Statement.....	7
Statement of the Problem	7
Research Questions	8
Hypotheses	8
Significance of the Study.....	9
Definitions	10
CHAPTER II: THE LITERATURE REVIEW.....	12
Introduction	12
Understanding Trauma on Campus	13
The Biopsychological Effects of Trauma on Learning.....	21
Faculty, Instruction, and Student Learning.....	26
Faculty Development.....	33
Summary of the Literature Review	39
CHAPTER III: METHODOLOGY	41
Introduction	41
Research Design.....	41
Study Participants	42

Educational Interventions	46
Data Collection	47
Conceptualizing the Variables	48
Measuring the Variables.....	50
Survey Instrument.....	52
Data Analysis Methods	53
Assumptions and Limitations.....	55
CHAPTER IV: DATA ANALYSIS AND FINDINGS	59
Sample Characteristics	59
Quantitative Findings.....	64
Summary of Data Analysis	76
Factors Affecting Workshop Attendance.....	79
Summary	79
CHAPTER V: DISCUSSION	81
Introduction	81
Interpretation of the Findings	81
Characteristics	82
Questions	83
Question 1.....	83
Question 2.....	86
Question 3.....	89
Limitations of the Study.....	89
Implications for Practice.....	94
Implications for Further Research and Policy	95
Conclusion.....	96

References	99
APPENDICES.....	124
A. Study on Trauma Survey	125
B. Invitation to a Trauma-Informed Workshop – Treatment Group.....	134
C. Consent Statement – Treatment Group.....	135
D. Faculty Development Workshops.....	139
E. Invitation from the Director of the Center for Faculty Development	142
F. IRB Approval for Research	143
G. Protecting Human Research Participant Certificate.....	144

List of Tables

Table 1. Academic Rank.....	60
Table 2. Levels Taught	61
Table 3. Years of Teaching.....	61
Table 4. Attended a Workshop	63
Table 5. Pre-Workshop Knowledge.....	64
Table 6. Pre-Workshop Attitude.....	67
Table 7. Pre-Workshop Practice	68
Table 8. Pre- and Post-Workshop Knowledge.....	69
Table 9. Pre- and Post-Workshop Attitude-Treatment Group	70
Table 10. Pre- and Post-Workshop Attitude-Comparison Group.....	72
Table 11. Pre- and Post-Workshop Practice-Treatment Group	73
Table 12. Pre- and Post-Workshop Practice-Comparison Group	74
Table 13. Workshop Attendance Factors.....	75

List of Figures

Figure 1. Discipline-Treatment Group.....	62
Figure 2. Discipline-Comparison Group.....	62
Figure 3. Knowledge-Correct-Treatment Group	65
Figure 4. Knowledge-Correct-Comparison Group	66

CHAPTER I: INTRODUCTION

Background

Since the onset of the twenty-first century, there has been a morphing of the academic role, responsibilities, and work life of the American professoriate (Finkelstein, Conley, & Schuster, 2016). The academic professor must be more globally aware and technologically adept (Szybinski & Jordan, 2010), vigorously engage in a “publish or perish” environment (Rawat & Meena, 2014), participate in service activities that require collaboration across the institution (Kezar, 2015, p. 15), and be responsive to changes in pedagogical strategies (Szybinski & Jordan, 2010). What once was a predominantly faculty-centered classroom has shifted toward a student-centered instructional environment. The state of affairs for faculty is a conundrum. The outcry by faculty depicting this current state is evidenced by faculty comments regarding overburdened workloads where “There is no room to think about improving teaching in the [overly demanding] environments that have developed” (Kezar, 2015, p. 17). The data regarding how faculty spend their time may contradict a student centered-focus, one where faculty spend time with individual students. Instead, as reported by Finkelstein, et al., (2016), in 2014, faculty indicated spending less than nine hours per week on instructional preparation (p. 249) (as compared to 12 or more hours in 2008) and fewer hours in close contact counseling or advising students (p. 255).

Driving the changes just discussed is the nature of the student body itself. Globalization is creating an ever-growing student population of international students who experience academic challenges in communication styles with professors, classmates, and staff. Social isolation occurs due to differences in U.S. lifestyles and diverse ways of thinking (Wu, Garza, & Guzman, 2015). Kim and Diaz (2013) reported an increase in immigrants attending higher

education programs. Some students arrive as refugees and are classified as undocumented immigrants, officially identified as Deferred Action for Childhood Arrivals (DACA) (Harnisch & Opalich, 2017). Transformations in the student population are occurring as colleges welcome previously underrepresented populations which include racial and ethnic minorities, first-generation students (the first child in one's family to attend college), students with low income (Altbach, Gumport, & Berdahl, 2005, pp. 128–129; Tate et al., 2015), students with learning and physical disabilities (Holt, White, Terrell, & Southern Illinois University, 2017), students with gender differences, such as members of the LGBT community (Sabato, 2016), and non-traditional students, such as students entering college at older ages including veterans (Campbell & Riggs, 2015).

According to Finkelstein et al. (2016), the demographically changing and growing population is a concern to faculty in the era of student centrality (p. 260). Student centrality includes a focus on student outcomes (p. 461), but also pertains to student satisfaction, which is a revenue concern for colleges. Revenue is not only a matter of enrollment, but equally one of student retention (p. 24). According to Kuh (2016), in the last fifty years higher education has placed the primary emphasis on student completion, especially for different groups (e.g., minorities) and higher education's ability to help students complete their education (p. 49). The concern for incoming underrepresented students is evidenced in the 2018 Association of American Colleges and Universities (AAC&U) four-year strategic plan that calls for increasing the completion rates for underserved students (AAC&U, 2018). Completion rates are still problematic. According to the National Center for Education Statistics (McFarland, 2019), for students who entered college in 2011 the graduation rates were different according to institutional selectivity rates. For example, schools with open admission policies saw 31 percent

of students graduate within six years. Low selectivity schools are more likely to have a greater representation of minorities and students from lower economic environments. Whereas, schools with high selectivity admissions policies, accepting 25% or fewer applicants, saw 87% of their students graduate within a six-year period.

While membership in the underrepresented populations is a plausible reason for not persisting through college, Boyraz, Granda, Baker, Tidwell, and Waits (2015) indicated that the dropout rate is proportional to the rate of students experiencing trauma. More than half of contemporary students enter college with a history of experiencing traumatic events (Boyraz et al., 2015). This estimation is likely an understatement. In 1998, a study now known as the *Adverse Childhood Experience Study* (ACEs), reported that 66% of the population had experienced at least one traumatic event as a child, irrespective of socioeconomic background (Felitti et al., 1998). Continued ACEs have led to the statement that most people in the U.S. have experienced at least one adverse childhood experience (Stevens, 2019). Studies have found that the underrepresented and non-traditional students, including military veterans, have a higher likelihood of past traumatic experiences (Dutro & Bien, 2014; Porche, Costello, & Reynoso, 2016).

Of great concern to colleges is that traumatic experiences are known to have long-lasting debilitating effects on both physical and mental health, as well as learning into adulthood (Cowan, Callaghan, Kan, & Richardson, 2016). According to the *National Survey of College Counselors*, students are increasingly seeking counseling services for mental health issues that occurred prior to attending college (Gallagher, 2014). Therefore, faculty must now be knowledgeable about trauma-related consequences for student learning and consider how this knowledge can inform their instructional practices.

Trauma is defined as an experience in which “a person’s internal resources are not adequate to cope with external stressors” (Hoch, Stewart, Webb, & Wyandt-Hiebert, 2015). This broad definition implies a ubiquity of trauma but does not capture the devastating effects of trauma. The term ACEs, which has become synonymous with trauma as it occurs from birth to late adolescence, is now viewed as a cause of impairment to physical, emotional, social, and cognitive development. According to Sandra L. Bloom, M.D. of the National Collaborative on Adversity and Resilience (NCAR), “ACEs studies are as revolutionary as germ theory was for the 19th century” (Felter & Ayers, 2016). This statement is a recognition that trauma is biological with ramifications as serious as the deadly diseases of tuberculosis and cholera that ran rampant in the 1800s. Indeed, ACEs are associated with medical issues, including early mortality (Felitti et al., 1998). In its non-lethal form, trauma extends into a child’s social, emotional, cognitive, and physical well-being. The effects of trauma can be seen in academic performance as behavioral problems, frequent absenteeism, grade repetition, and placement in special education (Shonk & Cicchetti, 2001). The extent of these early experiences is lifelong and often unrecognized or misidentified.

The top 10 indicators of ACEs are smoking, severe obesity, physical inactivity, depression, suicide attempt, alcoholism, illicit drug use, injected drug use, 50+ sexual partners, and sexually transmitted disease (STD) (Hoch et al., 2015). Other trauma associated behaviors include anxiety, relationship issues, eating disorders, and obsessive compulsive disorder (Hoch, 2015). ACEs can compromise a child’s emotional, behavioral, or physical development (Bethell et al., 2012). Trauma can affect beliefs about the future, take away the sense of hope, and limit expectations about life (Center for Substance Abuse Treatment, 2014).

Trauma-inform programs (sometimes referred to as trauma-sensitive programs) that provide information to teachers, administrators, all school staff, parents, and students are now offered in PreK – 12 education settings. These programs have been found to be effective in creating an awareness of behaviors interfering with learning and in improving the educational environment addressing the needs of students who have experienced trauma (Chafouleas, Johnson, Overstreet, & Santos, 2016; Hoch, 2015). Trauma-inform programs include biopsychological information related to trauma. Biopsychology is a science that integrates data from biology and psychology. The science is a result of technological advances since the 1990s. Biopsychological knowledge offers new understandings about student behaviors, such as motivation or lack of motivation (Di Domenico & Ryan, 2017; Hamid, 2016; Tyng et al., 2017), physiological or health reasons that cause student absenteeism (Rice & Fales, 2016), lack of attention or poor focus (Blair & Raver, 2015; De Raedt & Koster, 2010). Trauma has been associated with physical, cognitive, emotional, and social developmental delays (Blair & Raver, 2015; Burke, Hellman, Scott, Weems, & Carrion, 2011), which are also addressed as learning or mental health disabilities (Center for Substance Abuse Treatment, 2014; Seale, Georgeson, Mamas, & Swain, 2015).

Even though science is integrated into trauma-informed programs, biopsychological knowledge as it pertains to learning and instruction has only cautiously been introduced in the educational setting (Varma, McCandliss, & Schwartz, 2008; Zadina, 2015) due to hasty adoption without adequate research. Such adoption has led to misinformed instructional practices (Christodoulou & Gaab, 2009, p. 556, Zadina, 2015). Furthermore, the effects of trauma are individualized (Samuelson, Bartel, Valadez, & Jordan, 2017, p. 538) and drive the need to vary or diversify instructional practices, and researchers also caution that the lack of knowledge in the

classroom regarding trauma and disabilities may result in additional trauma caused by those who do not understand trauma-associated behaviors (Carello & Butler, 2014; Sniatecki, Perry, & Snell, 2015).

Beginning in the 1990s, the awareness of trauma's impact on student learning has resulted in education initiatives (Marcus 2014). It is only recently that higher education has sought to address trauma's impact on learning through a trauma-informed perspective (Davidson & Northwest, 2017; Felter & Ayers, 2016; Hoch, 2015). One doctoral dissertation conducted within a community college setting found that faculty found the trauma-informed program was beneficial (Doughty, 2018). What is not known is what makes the trauma-informed program effective. What needs to be explored is whether biopsychological knowledge is useful in helping faculty understand the impact of trauma on students and classroom practice.

In conclusion, the current era in higher education is an era of change which diverts the faculty's primary focus away from students. The period is also one that is more inclusive as higher education seeks to meet the needs of a new student population that previously has not been afforded the opportunity of a post-secondary education and who have a higher likelihood than previous student populations to experience trauma. Recent advances in technology provide a biopsychological, science-based understanding of trauma and its impact on learning. Trauma-informed programs that have incorporated this scientific information have been effective in PreK – 12 educational settings. Yet, the adoption of biopsychology into education has been viewed with caution. In the interest of the new population of college students and shifting faculty responsibilities, research is warranted to understand factors that would support faculty attendance in trauma-informed programs and to assess the effectiveness of biopsychological information in

trauma-informed programs for understanding student behaviors and informing instructional practices.

Purpose Statement

The purpose of this quantitative study was to investigate faculty of a four-year higher education institution to determine (1) the extent of faculty knowledge, attitudes, and classroom practices regarding the biopsychological science behind trauma and its effects on student learning; (2) the effectiveness of a professional development intervention necessary to inform and increase faculty interest about the science of trauma as it relates to instructional interactions and practices; and (3) what factors might facilitate or impede the impact of the proposed educational intervention. The ultimate goal of the investigation was to significantly help the higher education community understand the benefits of the biopsychological effects of trauma to effectively meet the needs of students impacted by traumatic experiences.

Statement of the Problem

This introduction has presented a picture of the changing model of faculty responsibilities in higher education. This includes a higher demand for non-instructional obligations that detract from a new student population with intensive needs, which are exacerbated by trauma. Concurrently, there is a growing depiction of biopsychological processes that offer a scientific understanding of the nature of trauma as it relates to learning. The science of learning holds great potential to inform instruction and meet the needs of students, which is the ultimate goal of higher education. It is unlikely, given the recency of biological findings and the awareness of the prevalence and negative impact of trauma on student academic performance, that faculty are informed enough to develop positive attitudes or apply this knowledge to their instructional

practices. Based on the information provided in this introduction, an investigation is warranted to determine what type of interventions could best inform faculty or what factors could impede participation in faculty development programs.

Research Questions

This investigation is a study of the scientific contributions to trauma-informed programs. It is also an inquiry into factors that would support faculty in attending such programs. Three questions guide this research.

Question 1

Regarding the biopsychological effects of trauma on learning, how extensive is faculty knowledge, how favorable are their attitudes, and how informed is their classroom practice prior to exposure to an intervention (baseline)?

Question 2

To what extent does offering a structured professional development program related to the biopsychology of learning affect the knowledge, attitudes, and instructional behavior of college faculty teaching students with trauma-related learning interferences?

Question 3

What, if any, individual and organizational factors affect attending trauma-informed workshops?

Hypotheses

The research questions are derived from the following hypotheses. The first two hypotheses are based on the newness of trauma-informed programs, lack of research in this area at the higher education level, and the prior caution in which biopsychology has been viewed. The third hypothesis recognizes that faculty are undergoing a change in the weighting of responsibilities and that knowing the factors that could impede or support faculty development could assist in successful delivery of trauma-informed programs.

Hypothesis Based on Question 1 (in Three Parts)

It is hypothesized that (1) faculty have not received professional development to the extent that they have a sufficient amount of knowledge regarding the biopsychological effects of trauma on learning, (2) faculty attitudes toward biopsychology in understanding student behaviors will be influenced by their level of knowledge, and (3) faculty beliefs that biopsychology informs their instructional practice are influenced by their level of knowledge.

Hypothesis Based on Question 2 (in Three Parts)

It is posited that (1) attending a trauma-informed workshop will be effective in increasing knowledge regarding trauma and its impact on learning, (2) attending a trauma-informed workshop will result in an increase in a more favorable attitude that biopsychological knowledge is informative in understanding student behaviors, and (3) attending a trauma-informed workshop will increase beliefs that biopsychological knowledge can inform instructional practices.

Hypothesis Based on Question 3

It is anticipated that factors exist which may inhibit attendance in trauma-informed programs.

Significance of the Study

This research is the first attempt to assess faculty knowledge, attitudes, and beliefs about the biopsychological effects of trauma on learning and instructional practices. The study also assesses whether biopsychological knowledge in a trauma-informed program can increase awareness and lead to more favorable attitudes and positive beliefs of the effectiveness of this knowledge related to understanding student behaviors and informing instruction. The third component of this research investigates factors that can support faculty learning about trauma.

The findings will be important to faculty, administrators, and ultimately the students who enter the classroom with trauma-related behaviors that interfere with learning. This is especially important in a time when research indicates that faculty have less time to spend on students (Finkelstein et al., 2016) and faculty development (Kezar, 2015). Financial support may be limited as history indicates a scarcity of funding for faculty development in the interdisciplinary areas of biopsychology and educational neuroscience (Varma et al., 2008). The results of this study provide support for grant funding, as the results are the first to show biopsychology as an essential component in trauma-informed programs. If grant funding cannot be relied upon, information from the study may be helpful for colleges and universities in designing an infrastructure, a critical component for a sustainable program (Kezar, 2015), at minimum cost and time expenditure in development of a trauma-informed professional development program.

Definitions

This section provides definitions for terms used throughout the paper.

- Adverse Childhood Experiences (ACEs): These refer to trauma occurring in childhood. ACEs refer to both the trauma-related experience and to the research studies (Felitti et al., 1998)
- Biopsychology: There are many terms used synonymously with biopsychology, such as neuroscience and brain-based research. Because psychology has presented much information on trauma and has evolved with technological advances in brain scanning and imaging and because the impact of trauma affects the entire body as a system (Felitti et al., 1998; Porges & Dykema, 2006), the term biopsychology is applied in this study. Biopsychology is a study of the physiological bases of behavior. Its focus is on the function of the brain and the nervous system related to the activities of thinking, learning, feeling, sensing, and perceiving.

- Student Retention: College student completion of their educational objectives (Kuh, 2016).
- Trauma: Trauma is an experience in which a person's internal resources are not adequate to cope with external stressors (Hoch, 2015).
- Trauma-Informed [School] Environment: This is where all "feel safe, welcomed, and supported and where addressing trauma's impact on learning on a school-wide basis is at the center of its educational mission. A safe, calm, secure, and supportive environment" (Cole, Eisner, Gregory, & Ristuccia, 2013, p. 11).

CHAPTER II: THE LITERATURE REVIEW

Introduction

This literature review has five sections, including this introductory section. Section two defines trauma and explains its prevalence nationally and within the college student population. Section three focuses on the biopsychological foundations of trauma. Science offers an intellectual translation of student behaviors, such as the physical causes for acting out, appearing unmotivated, quiet or shy, and not being able to remember or the inability to focus. The fourth section incorporates a focus on faculty, instruction, and student learning. It includes a discussion about instructional practices and methodologies in light of trauma-informed programs and evidence that such informational sessions are beneficial. This evidence suggests a lack of awareness of trauma's impact on student mental-health, cognition, and physical well-being from a biopsychological perspective. This section offers ideas on instructional practices for improving trauma-related behaviors demonstrated by the students. Section five is a review of the current state of faculty professional development. Issues addressed include who supports and generates faculty education programs, the scarcity of trauma-informed programs, and the lack of research on trauma-informed programs for faculty. Section six, the concluding section, provides a summary leading to a call for investigation of faculty biopsychological knowledge, attitudes, and practices on learning and instruction, as well as the extent of professional development necessary for faculty to be trauma-informed.

Understanding Trauma on Campus

Trauma

The purposes of this section are as follows: A) familiarize the reader with the vast terminology and definitions associated with the word “trauma,” B) provide the data on the prevalence of trauma, C) present research on the effects of trauma on the student physically, emotionally, and cognitively, and D) discuss resiliency which is associated with overcoming trauma.

In 1998, a formidable research study known as the Adverse Childhood Experiences Study (Felitti et al., 1998) was published. ACEs are traumatic events that occur in childhood (birth to late adolescence) and are associated with medical issues, including early mortality (Felitti et al., 1998). The ramifications of trauma in its non-lethal stage extend into a child’s social, emotional, cognitive, and physical well-being. The consequences of trauma can be seen in academic performance as behavioral problems, frequent absenteeism, grade repetition, and placement in special education (Shonk & Cicchetti, 2001). The extent of these early experiences is lifelong and is often unrecognized or misidentified.

Trauma is associated with numerous appellations, descriptions, and evolving definitions. As a result, conversations can be confusing due to terminology. Trauma has been defined in terms of how it is caused, the time of its occurrence, whether it affects a group or an individual, and whether its origins have an internal (biological) or external basis. There are various biopsychological definitions (Grossniklaus, Ferguson-Smith, Pembrey, & Lindquist, 2013), and these will be discussed later in this paper.

The ACE Study initially identified the causes of these physical reactions as “emotional, physical, or sexual abuse, and household dysfunction” (Felitti et al., 1998). In essence, a trauma

causing event can occur in any venue. The Substance Abuse and Mental Health Services Administration (SAMHSA) defines trauma as “an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individual’s functioning and mental, physical, social, emotional, or spiritual well-being” (Center for Substance Abuse Treatment, 2014, p. 7). Two define trauma as a response to “a negative external event or series of events which surpasses one’s usual coping skills” (Terr, 1991) and “Any experience in which a person’s internal resources are not adequate to cope with external stressors” (Hoch et al., 2015, slide 3). As the definitions evolve, they are trending toward a sensitivity for the uniqueness of an individual’s experience, as can be seen in the latter example with the use of the word “any.”

Trauma, when it occurs within large groups, such as in a natural disaster, is called collective trauma (Updegraff, Silver, & Holman, 2008). Single-incident trauma is a one-time event, such as a motor vehicle crash, fall, or physical assault. Multiple terms are associated with trauma with overlapping terms evidenced in the definitions of complex and developmental trauma, toxic stress, and one component of post-traumatic stress disorder (PTSD). These multiple terms focus on compounding experiences of a singular or repetitive event. Complex trauma is defined as exposure to repeated occurrences of the same type of traumatic event (van der Kolk, McFarlane, & Van der Hart, 1996). Toxic stress, a term associated with internalized trauma is identified as adverse experiences that are prolonged and frequent, such as emotional or physical neglect or being raised by a severely depressed caregiver or drug-addicted parents (Lieberman, 2012 as cited in Walkley, 2013; Walker et al., 2012). Developmental trauma requires a history of trauma that causes persistent and pervasive emotional and physiological dysregulation (Bremness & Polzin, 2014).

According to the National Center for PTSD, PTSD may stem from a single incident, or it may be identified as a complex trauma as a result of many events. The diagnosis of PTSD requires meeting all of the criteria in eight (8) categories (National Center for PTSD, 2018):

- A. The person was exposed to death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence
- B. The re-experiencing of a symptom (e.g., flashback, which is the reexperiencing of the traumatic event as if it were happening)
- C. Avoidance symptoms
- D. Negative thoughts or feelings
- E. Arousal and reactivity symptoms
- F. Symptoms lasting for more than one month
- G. Symptoms creating distress or functional impairment
- H. Symptoms not due to medication, substance use, or other illness.

Prevalence and Presence on the College Campus

The recent recognition of the pervasiveness of trauma as it is informed by biopsychological research is driving the urgency for trauma-informed policies and programs in post-secondary institutions (Davidson & Northwest, 2017; Felter & Ayers, 2016; Hoch et al. 2015). Awareness of the prevalence of trauma nationally has increased significantly since the release of the original ACE Study in 1998 (Hoch et al., 2015). Furthermore, the study has created the awareness that trauma, when occurring in childhood, can have long-lasting effects extending into adulthood (Anda et al., 2009; Felitti et al., 1998).

According to the National Center for PTSD, PTSD is often associated with military service. The rate of PTSD occurrence in veterans who served in military action is approximately

11% to 20% (National Center for PTSD, 2016). As awareness of trauma is growing, so are the estimates of lifetime exposure to trauma identified by preadmission college students. Hoch reported the prevalence as 75% (Hoch, 2018), with other estimates as high as 85% (Davidson & Northwest, 2017). However, Felitti found that education, socioeconomic status, ethnicity, or culture had no bearing on experiencing trauma (Felitti et al., 1998).

Demographic factors have been associated with trauma's impact on grades, retention, and the risk of re-experiencing trauma on campus. College can be stressful for any student due to academic pressure, work and family responsibilities, or separation and individuation from their family (Pedrelli, Nyer, Yeung, Zulauf, & Wilens, 2015), and the access to new freedoms that occur in college can add to this stress, especially for students with traumatic histories (Read, Ouimette, White, Colder, & Farrow, 2011). Moreover, the experiencing of traumatic events is far-reaching, as these events occur among all socioeconomic and demographic backgrounds (Felitti et al., 1998). Therefore, the traditional college student is not immune to trauma. An added concern for colleges, however, is the changing student population who are likely to have or will experience adverse experiences during their college years.

Read et al. (2011) found that gender and lower socioeconomic status were factors in having experienced trauma on the college campus. In fact, 75% of females and 54% of males reported having a traumatic experience. Moreover, 25% of the trauma experiences were reported as physical assaults, 11% of women and 2% of men acknowledging sexual assault. Becker et al. (2017) reported the lesbian, gay, bisexual, transgender and queer (LGBTQ) community members have greater exposure to trauma with higher rates of suicides than their cisgender peers (Becker et al., 2017). Traumatic stress can exist just by virtue of being an African American, Latino (Blair et al., 2011; Boyraz, Horne, Owens, & Armstrong, 2013; Mielock et al., 2016), Asian,

Asian American (Han, Luo, Jacobs, & Jean-Baptiste, 2013; Wei, Ku, & Liao, 2011), or American Indian/Alaska Native student, or by being refugee students (Davidson & Northwest, 2017; El-Awad, Fathi, Petermann, & Reinelt, 2017) or students with disabilities (Huebner, Thomas, & Berven, 1999; Sniatecki, Perry, & Snell, 2015).

College students have a higher risk of experiencing new trauma than do members of the general public (Galatzer-Levy, Burton, & Bonanno, 2012). In addition to the previously mentioned demographics, traumatic events in mass proportions, such as gun violence, have occurred on college campuses. Statistics indicate that, from 2001 to 2016, there were 190 incidents on 142 U.S. campuses where 437 people were shot of which 167 were killed, and 270 were wounded. Over this period, violent events have accelerated with the highest number of events occurring within the last five years (Cannon, 2016). Adverse social exchanges such as bullying can be of a traumatic nature (Krasnoff, n.d.). Lund and Ross (2016) found, in a review of 14 studies on college campuses, the prevalence, on average, of 20% to 25% of students reporting being a victim of “non-cyberbullying” and 10% to 15% of students reporting cyberbullying victimization. Young-Jones, Fursa, Byrket, and Sly (2015) found that college students who had previously experienced bullying and who continued to experience the bullying had significantly lower academic motivation than students who had not been bullied. As bullying can occur between students, it can also exist between students (Connelly, 2009), as well as between faculty members (Peters, 2014). Marraccini, Weyandt, and Rossi (2015) found that, in a study of 330 college students, 18% identified themselves as having been bullied by an instructor, whereas 51% of the students stated they had observed bullying by the instructor. Clark, Farnsworth, and Landrum (2009) and Clark and Olender (2011) reported incivility and bullying behaviors by faculty in nursing schools. In a literature review of 31 peer-reviewed articles, Seibel

(2014) reported bullying as bidirectional between instructor and student, both intentional and pathological, and that these behaviors extended post-graduation into the work setting. Seibel further recognized that bullying, though antithetical to the stated intent of instructors, was nevertheless existent and destructive toward student learning and wellness. Though known as damaging behaviors, these examples are a substantiation of the findings of Keashly and Neuman (2010), who found that bullying can be part of an institution's culture and climate.

Research indicates the prevalence and pervasiveness of trauma on college campuses and identifies demographic characteristics that increase student susceptibility to exposure. Students can enter college having experienced adverse and traumatic events. Yet, there is the likelihood of the persistence in experiencing and re-experiencing or experiencing trauma for the first time on the college campus. How this affects the student is presented in the following section.

How Students Are Affected

Personal reactions to adverse situations vary (Kerka, 2002). Frequently, memories of trauma may not be immediately available but may lie dormant to be reexperienced later in life. Therefore, the college student may not be aware of the trauma or its demonstrated behaviors (Field, Beeson & Jones, 2015, p. 211; Porges & Dykema, 2006). As noted by Field et al. (2015), the brain is not designed to think first. If awareness does occur, it happens after the behavioral or emotional reaction (p. 211). Moreover, trauma in early life can have long-lasting effects without conscious memory (Blair, 2002). However, Gaensbauer (2011) reported that children can retain and repeat traumatic behaviors due to mirror neurons (to be discussed later in this paper). At all ages, overwhelming experiences may prohibit the brain from processing the event and can create cognitive distortions. These distortions are often harsh self-judgments with the belief that the

abuse was deserved, and the victim can feel responsible for encouraging or causing the traumatic event (Briere, 2002; Porges & Dykema, 2006).

Highly recognizable trauma associated behaviors include sleep disturbances, substance use and abuse, self-destructive and self-harming behaviors, depression, flashbacks, emotional dysregulation which causes extreme feelings and reactions, and hyperarousal which is the body's way state of remaining on alert (Center for Substance Abuse Treatment, 2014, p. 40). Other outcomes include difficulty in focusing (Hoch et al., 2015) and deficits in short-term memory, which significantly impact a student's ability to retain information (Lawson, 2017; Morey et al. 2009) and often result in ineffective coping skills (Briere & Scott, 2014).

Poor coping skills offer challenges with emotional regulation, anger, aversion to risk-taking, test anxiety or anxiety in public speaking, working with others, helplessness, withdrawal or isolating oneself, or involvement in unhealthy relationships (Hoch et al., 2015). As noted previously, emotions affect thinking, and trauma alters cognitive thoughts. Self-perceptions become beliefs in incompetency or a damaged-self. Dissociation allows the mind to separate itself from the abuse by engaging in acts that range from daydreaming (Center for Substance Abuse Treatment, 2014) to the extreme of having more than one personality with a diagnosis of dissociative identity disorder (DID) (Mueller-Pfeiffer, 2012, pp. 475–476). Trauma victims often think that others and the world are unsafe and unpredictable and that the future is foreboding, believing that personal suffering and adverse outcomes will persist (Center for Substance Abuse Treatment, 2014, pp. 30–41). Experiencing trauma can create a fear of authority and distrust of teachers. Rules and associated consequences may be viewed as punishment. The victim may demonstrate self-protective behaviors such as fear to participate in new activities (Streeck-Fischer & van der Kolk, 2000). Fear is also related to the “fight, flight, and freeze” responses,

which are severe reactions to a threat. The fight-or-flight protective response creates a state of high alert to fight or defend oneself, or to escape through fleeing (Teicher et al., 2003). The freeze state immobilizes the body by feigning death (Porges & Dykema, 2006).

The ACE Study emphasized, to a great extent the associated health problems of adverse experiences (Anda et al., 2006). A common but potentially serious physical effect is somatization, a psychological disturbance that manifests within the body, which may include chronic pain. Somatization is observed in victims of bullying. It is related to high absenteeism, often co-occurring with elevated depression. Morris et al. (2016) indicated that the person is often unaware that their emotions are linked to their symptoms.

Resiliency

The effects of trauma can be devastating and even lead to illness and early death (Felitti, 1998). However, according to the American Psychological Association (APA), people are generally resilient and adapt well when faced with adversity. Resiliency is the ability to “bounce back” and manage emotions and stressors. Various personal characteristics are shown to be associated with resiliency. These characteristics include confidence in one’s abilities, a positive self-image, the capacity to plan and carry out ideas, and the ability to communicate and solve problems (Joyce et al., 2018). In the college setting, Boyraz found that effort regulation was involved in higher grade point averages (GPAs), which were a factor in staying in college past the second year (Boyraz, Horne, Owens, & Armstrong, 2013).

Research has indicated that lessening of stressors can occur through developing resilient behavior. At the PreK–12 level, research has found that the teacher can facilitate resiliency through a strong insistence on cultural respect and by developing a caring and a task-focused community (Bondy, Gallingane, & Hambacher, 2007). In a qualitative study of college students,

Caruana et al. (2011) interviewed 12 students to understand their resiliency. The students came from diverse cultures and were of varying ages, and each student had unique challenges. In my review of their work, I found that some generalizations can be applied to the instructional classroom. However, the uniqueness of each student's circumstances requires careful contemplation by the teacher in meeting the needs of the student.

The Biopsychological Effects of Trauma on Learning

In the preceding sections, much of the discussion identified behaviors that affect student performance. However, since the late 1990s, neuroimaging and biological research have provided a scientific understanding of behaviors (Varma et al., 2008; Zadina, 2015). What this new information indicates is that cognitive and emotional expressions are responses to stimulation of the senses. They are physiological reactions (Field, Beeson, & Jones, 2015; Immordino-Yang & Damasio, 2007; Scott et al. 2015; Tying, Amin, Saad, & Malik, 2017) and mediators of nearly all aspects of cognition (Hayes, VanElzaker, & Shin, 2012; Tyng et al., 2017). The stimulation causes activation of endogenous (natural biological) chemicals and neurons (brain cells). Whether a student is listening to a lecture, engaged in problem-solving, or engaged in discussions with classmates, neuronal and cellular change is occurring.

Unconsciously, the brain and body are having physical reactions to sensory input, such as facial expressions (visual stimulation) (Jack, Sun, Delis, Garrod, & Schyns, 2016), verbal instructions (auditory stimulation) (Wilson, Saygin, Sereno, & Iacoboni, 2004), or physical contact (tactile stimulation) (Gallace, & Spence, 2014). The endogenous chemicals of dopamine, serotonin, norepinephrine, and endorphins play a role in the control of happiness and, conversely, anxiety and depression (Farhud, Malmir, & Khanahmadi, 2014). Stimulation is also associated with the brain's ability to recognize whether an activity is one of value or will have a beneficial outcome.

When the perception is a value, the sensory stimulation drives learning and motivation as a result of the activation of the endogenous chemical dopamine (Hamid, 2016). Dopamine and serotonin are implicated in the brain's processing in determining whether an event is perceived as rewarding, while stress reduces the reward responses of both chemicals, suggesting a possible physiological basis for the feeling of lack of pleasure or of the capacity to experience a sense of pleasure (Weixin, Li, Feng, & Luo, 2017).

In early life, the relationship with one's parent(s) establishes social behaviors. This biological action modulates the endogenous chemicals of opioids (Panksepp, Herman, Vilberg, Bishop, & DeEsquinazi, 1980) and oxytocin (De Dreu, 2012; Donaldson & Young, 2016) in social bonding. Also, relationships can create a sense of trust or, as noted by Bowlby, can create insecure attachment, resulting in the lack of trust, (Bowlby, 1983), feelings of rejection, or the creation of barriers to social approach or feeling at ease with others (De Dreu, 2012).

In addition to chemical reactions, the structure of the brain evidenced by mirror neurons plays an essential role in social development. Meltzoff and Moore (1983) determined that newborn infants could mimic the facial expressions of adults. According to Gaensbauer (2011), mirror neurons are involved in a young child's ability to repeat actions experienced during a traumatic event. Mirror neuronal responses are at a preconscious level and are the basis of repetitive and mimicking behaviors throughout the life span. These neurons are active in classroom instruction where facial expressions of the instructor or fellow students can be read or misread (Davidson & Northwest, 2017, p. 17). Moreover, negative interpretations activate the internal response system without conscious awareness.

Much research has provided overwhelming evidence of the biological and physiological causes of healthy and deleterious responses to trauma and learning. As noted earlier, the negative

impact of trauma affects motivation (Di Domenico & Ryan, 2017, Hamid et al., 2016), cognitive abilities of memory (Lawson, 2017), self-regulation (Blair & Raver, 2015), attention (Shonk & Cicchetti, 2001), health (Anda et al., 2009), and student absenteeism (Rice, & Fales, 2016). Although traumatic reactions are not optimal, they are enacted for survival purposes (Teicher et al., 2003). Trauma is a result of both environmental activation (stimulation through the senses) and genetics. Anxiety can have a genetic basis (Parker, Sokoloff, Leung, Kirkpatrick, & Palmer, 2013). The term *epigenetic* describes an environmental interaction causing the unfolding of genes. Overwhelming stressors can induce an epigenetic reaction resulting in general anxiety (Grossniklaus, Ferguson-Smith, Pembrey, & Lindquist, 2013) and more severe reactions, such as PTSD (Smoller, 2016). Also, because of the epigenetic component, responses to trauma are unique to the individual (Hoch et al., 2015).

Fundamental brain structures are involved in the reception and processing of sensory stimuli. The primary area of activation is referred to as the limbic area, which includes the amygdala, hippocampus, and hypothalamus (Phillips et al., 2006). The limbic structures are linked to the adrenal gland, causing activation of adrenaline through the hypothalamic-pituitary-adrenocortical (HPA) axis (Herman, Ostrander, Mueller, & Figueiredo, 2005; Phillips et al., 2006), and interconnected with the prefrontal cortex (Roelofs, 2017). The prefrontal cortex is implicated in the ability to self-regulate emotions (Heatherton, 2011) and the inability to exert attentional control over negative schemas for extended periods, which is symptomatic of depression (De Raedt & Koster, 2010). Each of the structures is necessary for normal functioning of alertness (amygdala), memory (hippocampus,) and internal regulation (hypothalamus) (Swenson, 2006; Tyng, Amin, Saad, & Malik, 2017).

During periods of overwhelming stimulation, which may occur in a single occurrence such as a natural disaster, witness to an act of violence, or in sustained trauma that happens over long periods of time, the healthy responses of these structures are undermined causing deleterious reactions and alterations to their structure and functioning (Blair, 2002; Turner, 2007; Tyng et al., 2017; Yehuda & LeDoux, 2007). Shekhar, Truitt, Rainnie, and Sajdyk (2005) found that stress-induced plasticity (a rewiring of cells in the amygdala) was associated with anxiety. Thompson, Hannan, and Miron (2014) found that experiencing sustained abuse early in life is related to a reduction in volume of the amygdala, causing a permanent state of hyperarousal and fear, and is associated with the fight-or-flight response, which both emotionally and cognitively creates a state of always being on alert and ready to fight or flee. Teicher et al. (2003) found, in a sample of young adults ages 18 to 22 who reported having experienced child abuse, that the reduced volume of the amygdala was associated with irritability and depression. Teicher et al. (2003) suggested that gender may affect the amygdala's response to extreme stress, which was also more recently supported (Jones & Monfils, 2016). As noted, the amygdala is affected by stress. The amygdala can negatively impact other structures (Kim, Song, & Kosten, 2006), including the hippocampus (Apps & Strata, 2015). Both the amygdala and the hippocampus react with other brain structures. The emotional reaction of freeze is a result of hippocampal activity, through a connection of the HPA axis to the prefrontal cortex (Apps & Strata, 2015), an area and behavior also closely connected with the amygdala, decelerated heart rate, and the body becoming immobile (Apps & Strata, 2015; Roelofs, 2017) to feign death (Porges & Dykema, 2006).

Trauma also has harmful effects on memory. Hayes et al. (2012) reported that abnormalities in the amygdala and hippocampus are associated with disturbances in memory

encoding and retrieval. Although the hippocampus is implicated in memory, the hippocampus is free of an emotional attribution (Rolls, 2015). Evidence exists that the amygdala is responsible for altering the function of the hippocampus (Kim, Song, & Kosten, 2006; Morey, 2009). In a review of neurocognitive and neuroimaging studies, Hayes et al. (2012) found that the prefrontal lobe is necessary for controlling stimuli for self-regulation, social capabilities, attention, and working memory, which requires the ability to retain information for short periods before transferring it into long-term storage.

The limbic structures are also implicated in somatic responses that include pain and interfere with biorhythms and sleep (Rice & Fales, 2016). In a review of physiological connections for trauma therapy, Hayes cited evidence of the network of connections from the limbic structures to the autonomic nervous system (ANS). The ANS regulates the activity of the body, such as in the heart, lungs, intestines, hormones, and the endocrine system. The ANS can alter blood circulation, change muscle tone, and stimulate cognitive arousal. A third area in the network is the emotional motor system (EMS), which is associated with motor control. The fourth area is the reticular arousal system (RAS), which involves waking and sleeping patterns (Hayes et al., 2012). Examples of trauma associated with impaired somatization include chronic pain and elevated depression symptoms in children who have experienced cyberbullying (Rice & Fales, 2016) and chronic abdominal pain in youth (Morris et al., 2016).

While trauma and stress can have debilitating physical effects, the brain can maintain and repair itself (Apple, Fonseca, & Kokovay, 2017). Neurogenesis is the brain's ability to generate new neurons. Neuroplasticity is the ability to make connections by either wiring or rewiring neurons together for learning and adjusting to incoming information; it is a molecular reaction to either adapt or repair when damaging stress occurs (Krishna et al., 2017; Radley, Morilak, Viau,

& Campeau, 2015). The two physical reactions are instrumental for healthy development in favorable conditions and for repairing connections when the threat is diminished or adapting under extreme conditions. Neurogenesis plays a vital role in mood and cognitive regulation (Apple et al., 2017). The evolution in scientific research is providing much information regarding the effects of trauma, as well as how the brain functions in a protective and healing state. The scientific findings have been so impactful that there is an advancing demand for education to shift to a scientific focus for vetting and validation of learning theories (Di Domenico & Ryan, 2017) and instructional practices (Zadina, 2015).

Faculty, Instruction, and Student Learning

A Reassessment of Behaviors

The previous sections of this review established the prevalence, the presence of trauma on the college campus, and the biological evidence, which is alarming yet yields an optimistic outlook. Biopsychological research has contributed to education with its focus on the emotional brain (Fischer & Immordino-Yang, 2014; Zadina, 2015). It offers the opportunity to dispel old beliefs regarding student behaviors. This literature review establishes the need to investigate faculty knowledge and beliefs about the biopsychology of trauma on learning and to determine the breadth and depth of information that is needed to effectively inform instructors. The research also seeks to understand factors that would enhance or impede faculty understanding in this regard. Evidence exists that a workshop would be necessary and informative (Hook & Farah, 2013; Wilson, 2013). What is also known is that trauma can interfere with student learning and that such interference can result in misinterpretation by instructors of student behaviors (Hoch et al., 2015; Sniatecki, Perry & Snell, 2015).

There are factors likely to distort faculty perceptions of student behaviors. These include somatization and its associated frequent absenteeism (Shonk & Cicchetti, 2001), the responses of fight, flight, or freeze, and fear of authority (Streeck-Fischer & van der Kolk, 2000), which has the potential to be exacerbated by student perceptions of faculty as authoritative figures (Davidson & Northwest, 2017, pp. 6–7) with a platform to bully students (Peters, 2014). Additionally, biopsychology incorporates a new view of motivation (Hamid, 2016) which can dispel misconceptions regarding student behaviors that may lead faculty to interpret certain student behaviors as showing a lack of motivation (Hoch et al., 2015). Faculty, as well as students, may also be misinformed by prior medical beliefs and educational practices in a similar way to students who may have been misdiagnosed with attention deficit disorder or placed in special education programs (Shonk & Cicchetti, 2001).

Evidence exists that the biopsychology of behavior is not clearly understood (Porges & Dykema, 2006), as misconceptions still exist and are reflected in attitudes of faculty. Sniatecki, Perry, and Snell (2015) reported that faculty are likely to have a sensitivity toward students with physical disabilities but hold negative attitudes toward students with mental health and learning disabilities. An assessment of faculty whose schools have instituted a universal design for learning policy (a policy that allows for presentation and learning of content through different modalities) found that faculty serving as proctors held the belief that students who were allowed the use of cell phones or access to the internet would use these tools for cheating purposes (Black, Wienbery, & Brodwin, 2014). Gonzalez and Elliot (2016) found that faculty who were sensitive to student veterans with visible and invisible injuries did so only when the faculty member had a personal or familial connection with a military member. While these examples may lead to the conclusion that faculty need more information on accommodations (Black,

Wienbery, & Brodwin, 2014), a more accurate interpretation may be that faculty need to be better informed in understanding the biophysiological basis of mental health behaviors and learning disabilities.

Much to their credit, faculty who are aware of trauma have sought to address the unique needs of trauma-affected students. Yet, there are potential risks in this regard. Warnings exist regarding faculty without trauma training. According to Carello and Butler (2014), courses in literature, women's studies, film, education, anthropology, cultural studies, composition, and creative writing often present information on trauma. The researchers emphasize in the title of their paper, however, that "teaching trauma is not the same as trauma-informed" and that these practices, deemed as "potentially perilous pedagogies," could unknowingly retraumatize students (Carello & Butler, 2014).

Related to the above use of appropriate trauma-informed curriculum, noted by Carello and Butler (2014), is a caveat for understanding biopsychological practices. As knowledge regarding brain-based learning has been shown to have positive implications for learning instructions, neuromyths exist which have misinformed instructional practices (Christodoulou & Gaab, 2009, p. 556). These warnings must be heeded in the preparation or implementation of any trauma-informed program.

Trauma-Informed Programs

A critical need exists to build a robust evidence-based practice regarding trauma-informed service delivery in PreK–12schools (Chafouleas et al., 2016, p. 144). Such a need also exists in higher education. In an investigation of colleges and universities across the United States, Felter and Ayers found only 51 programs addressing trauma-informed instruction. These were primarily graduate programs within the disciplines of social work, behavioral health,

medicine, nursing, law, public health, and education, which addressed trauma within their curricula (Felter & Ayers, 2016, p. 7).

Until recently, there has been resistance to applying biopsychological research to instructional practices (Varma et al., 2008; Zadina, 2015). My investigation indicates that only a limited number of studies have investigated faculty in areas related to a biopsychological understanding of learning. Yet, evidence does exist that biopsychological concepts have been beneficial when applied in the classroom (Hook & Farah, 2013; Klinek, 2009; Zadina, 2015). Klinek found that Penn State faculty who were aware of brain-based learning and applied their knowledge to their instructional practices believed brain-based instructional practices were useful in their classroom practices (Klinek, 2009). Another study, a smaller qualitative investigation of teachers, interviewed teachers about the benefits of attending “Learning and the Brain” conferences. The results indicated that teachers found brain-based information helpful in understanding student behavior (Hook & Farah, 2013). Higher education and PreK–12 trauma-informed program content includes biopsychological information (Chafouleas et al., 2016, p. 147; Davidson & Northwest, 2017, p. 6; Felter & Ayers, 2016, p. 4).

Other research has been conducted in PreK–12 schools to analyze the effectiveness of trauma-informed school programs. As stated by Chafouleas (2016), “Once educators look at student behavior through a trauma-informed lens, it is easier to reframe their questions from blaming the child to asking what happened to the child and how can we help” (as cited in Krane, 2017). Wilson (2013) reported on four trauma-informed programs conducted in the K–6 public schools in Puget Sound Educational Service District 121 in Washington State. These schools had previously implemented programs designed to help students who had experienced trauma. The research assessed whether the Compassionate School Pilot Program, a trauma-sensitive program,

influenced teacher attitudes, interest in working with parents, students, and families, interest in acquiring more information about trauma and its impact on school performance, and whether participation in the program changed teaching practices used with students experiencing trauma. Results were positive for changes in attitude, interest in gaining more information, and teaching practices. No changes were found in “interest in working with parents, students and families.” The author indicates the possible cause for “no increase in interest” may have been a result of the high interest of the faculty before participation in the program (Wilson, 2013).

As stated earlier, trauma-informed programs have predominantly emanated from the PreK–12 sector of education. According to Chafouleas et al. (2016), PreK–12 trauma-informed programs have an established blueprint for trauma-informed service delivery containing the phases of implementation, professional development, and evaluation. The PreK-12 programs offer clarification of similar terms, such as stress, toxic stress, chronic stress, and adverse stress, which may cause confusion (Chafouleas et al., 2016, p. 146). These programs have also adopted terminology from the SAMHSA. As an example, the SAMHSA established six critical principles of a trauma-informed approach: 1) safety, 2) trustworthiness and transparency, 3) peer support, collaboration, and mutuality, 4) empowerment, voice, and choice, 5) cultural and historical perspectives, and 6) gender issues employed in PreK–12 programs (Chafouleas et al., 2016, p. 14).

Apparent differences exist between trauma-informed programs in colleges compared with the curricula of the PreK-12 educational settings. At the PreK-12 levels, parent involvement is a significant component. At the college level, the Family Educational Rights and Privacy Act (FERPA) limits the sharing of student information between the parent and family members. FERPA states that, once a student is 18 years of age or is enrolled in a post-secondary institution,

no matter the age of the student, with few exceptions, parents can have limited involvement with their child's education (USDOE, 2018). However, a misconception exists regarding FERPA. Colleges are authorized to contact parents or family members to protect the health or safety of the student, such as in a case of a student threatening suicide (Kaplin & Lee, 2014, p. 118).

A second difference is the response structure and nature of the primary, elementary, and secondary schools concerning intervention procedures, terms, and definitions, which are well established (Chafouleas et al., 2016, p. 148). Research indicates that colleges are in the early stages of the development of trauma-informed programs. Felter and Ayers (2016) found trauma education is occurring throughout the country in higher education settings; however, the content was part of the graduate curricula in fields of social work, counseling/therapy, medicine, and education rather than part of trauma-informed faculty professional development (Felter & Ayers, 2016, p. 6).

My review of trauma-informed programs at the higher education level found disparate definitions at the higher education level. The Philadelphia ACEs program adopted SAMSHA's definition:

Individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individuals' functioning and mental, physical, social, emotional, or spiritual well-being. (as cited in Chafouleas et al., 2016, p. 146).

Davidson (2017) adopted the definition by Hoch et al. (2015, p. 4) which is "any experience in which a person's internal resources are not adequate to cope with external stressors.

There are shared concepts between the PreK and higher education trauma-informed programs. Chafouleas, an investigator of PreK–12 programs, and Davidson, representing a higher educational venue, both state that a trauma-informed environment is a safe, calm, secure, and supportive environment (Chafouleas et al., 2016, p. 148; Davidson & Northwest, 2017, p. 15). The PreK–12 program from the Pennsylvania Office of Mental Health and Substance Abuse Services (Hodas, 2006) has similar procedures to that of Davidson regarding the responses to student-triggered reactions. These actions are cogently presented in the “Trauma-Informed Practices for Postsecondary Education: A Guide” published by Education Northwest. This guide provides four steps for working with students with past trauma-related experiences and behaviors (Davidson & Northwest, 2017, p. 16). The steps are:

1. Normalize and validate their feelings and experiences.
2. Assist them in understanding the past and its emotional impact.
3. Empower them to better manage their current lives.
4. Help them understand the current challenges in light of past victimization.

Furthermore, the literature authored by Davidson offers practical guidance for faculty who deal with students demonstrating behaviors that appear trauma-related. These include:

- Watch for signs in the other person. These may include irrational actions, a flushed face, intense emotions, or disjointed sentences.
- Be careful not to “mirror” the other person’s behaviors.
- Stay calm, move slowly, and be aware of safety.

When the emotional brain is engaged, the brain’s automatic response system can cause the student to behave erratically and dangerously. Also, the more you stay calm and collected, the easier it is for them to “mirror” you (Davidson & Northwest, 2018, p. 17).

In conclusion, this section has discussed key components of trauma-informed practices which included principles for classroom practices and faculty to student interactions. The section began with a brief history of the acceptance of the addition of biopsychological effects of trauma.

Faculty Development

Detrimental behavioral effects of trauma have been known to significantly impact the classroom setting. The effects of trauma are troublesome for the students, faculty, and schools, especially as they interfere with cognitive, social, and emotional abilities. These can negatively impact student academic success, student retention rates, and a potentially enriching college experience. Faculty then must be amenable to and informed by the knowledge and use of new information on the biopsychology of learning. There is evidence that faculty could benefit from such knowledge, and their practices could inform interactions and instructional practices with students (Doughty, 2018; Hook & Farah, 2013; Klinek, 2009; Wilson, 2013).

I have found an increasing number of research articles on trauma-informed schools and effective professional development. However, these studies (Anderson, Blitz, & Saastamoinen, 2015; Chafouleas et al., 2016; Walkley, & Cox, 2013; Wiest-Stevenson & Lee 2016; Wilson, 2013), have been generated from the investigation of PreK–12 venues. Perhaps this lack of research on higher education reflects the recency of higher education to engage in trauma-informed instructional practices. Therefore, my study has referenced these PreK–12 investigations for insights for assessing faculty professional development and interventions. As mentioned earlier in this paper, there are differences between these two educational levels. However, parallels may prove useful in this higher education intervention.

Anderson et al. (2015) noted that classroom staff does not often receive the professional development necessary to deliver educational services effectively, and without adequate support,

the school fails to create a coordinated collegial team (p. 121). The authors state that educational staff value professional development because it increases the staff's effectiveness in the classroom (p. 115). The researchers investigated the work of instructional support staff in PreK–12 classes. These staff members worked with students but did not have the full responsibilities of the lead classroom teachers (p. 121). Kezar & Maxey (2012) indicated that the adjuncts in colleges and universities are not treated as their full-time professional peers, and this emphasizes the importance of including adjuncts in communication and community (p. 1). In Anderson's research, two-thirds of the staff felt a sense of collegiality, while the faculty support staff members felt they did not receive adequate professional support to be effective in the classroom (Anderson et al., 2015, p. 126). This feeling of lack of professional support is troublesome since the success of trauma-informed programs depends on the behavior of its personnel (Metz, Bowie, & Blasé, 2007).

Systematic reviews of literature indicate faculty opinions of faculty development programs are generally high, reporting positive changes in attitudes, knowledge, and skills (Steinert, 2017). Faculty development is vital for ensuring institutional quality and supporting institutional change (Beach, Sorcinelli, Austin, & Rivard, 2016, p. 85) and is an effective professional practice (Condon et al., 2016). For example, studies conducted by nursing faculty on their instructional behaviors have resulted in significant changes that positively affected interactions between faculty and students, faculty-to-faculty, and their graduates in their clinical positions (Clark et al., 2009; Peters, 2014)

Faculty development in the past decade has been in response to the AAC&U's "College Learning in a New Global Century" (AAC&U, 2007), which includes a high emphasis on the STEM fields. A general search of the literature on faculty development yields multiple articles

for the integration of technology. According to Tyng et al. (2017), technology will be an excellent instrument for the biopsychological areas of emotion and memory to inform learning.

In Chapter I of this paper, Finkelstein et al. (2016) are cited for tracking the trends that are leading to a new perception of faculty work life where responsibilities are significantly changing. Austin and Sorcinelli (2013, pp. 86–88) enumerated the following issues for current faculty as fiscal constraints and faculty accountability, the increasing diversity of students, the opportunities and challenges of technology, and interdisciplinarity instructional collaborations among diverse fields. Additionally, the authors stated that there are changes in faculty characteristics and shifts in appointment patterns and concerns from early-career faculty members as they often feel overwhelmed and try to manage the many responsibilities they face (p. 89). Professional training, behavioral change, program implementation, and the successful adoption of new practices can be facilitated by an overarching system where faculty feel some control over changes (Ajzen, 2002). Conversely, when the perception exists that the support is weak or nonexistent, this can be a barrier that can interfere with the adoption of new programs (Baker, Kupersmidt, Voegler-Lee, Arnold, & Willoughby, 2010).

Faculty are the face of the institution for many students (Walkley & Cox, 2013). It is imperative in this twenty-first century era that professional development be state-of-the-art; this includes absorbing what science and research can tell us about learning, especially as science and technology have been so strongly emphasized (AAC&U, 2007). Higher education recognizes the growing importance of biopsychology. A mapping of biopsychological course offerings in higher education indicates that the term “biopsychology” in the department catalogs of psychology, social work, pharmacology, nursing, physiology, criminology, pharmacology, and courses within the schools of health and medical sciences. Such courses can be found across disciplines, as

exemplified by courses such as “Neuropsychology of the Religious Experience,” “Bio-psycho-social Foundations of Macroeconomics,” and “Biopsychosocial Law.” Biopsychology is a growing major in colleges. According to the Pace University website, biopsychology is an undergraduate major taken in preparation for medical school or for careers in neuroscience, clinical psychology, and other research-oriented positions (<https://www.pace.edu/dyson/programs/ba-biological-psychology-plv>).

Trauma-informed programs (mainly at the PreK–12 school levels) include biopsychological components (Felter & Ayers, 2016; Davidson & Northwest, 2017; Hoch et al., 2015). However, post-secondary undergraduate faculty and faculty in non-service fields do make decisions about curriculum planning and classroom activities. Research indicates that these decisions are currently based on the instructors’ thinking, which is derived from beliefs, prior experiences, including one’s disciplinary affiliation, and their institutional context (Hora, 2014). Thus, instruction is conducted without the benefit of an interdisciplinary approach merging science, psychology, and education (Zadina, 2015). Trauma-related research in education has focused on topics such as student disclosure of trauma to professors (Hayes-Smith, Richards, & Branch, 2010), trigger warnings (Carter, 2015; Medina, 2014), and the appropriateness of broaching trauma as a curriculum topic (Carello & Butler, 2014).

Scholars, however, have indicated that, even with the progress in professional development, research is not keeping up with innovative programs (Steinert, 2017). This inability to stay current is evident in trauma-informed related research. To date, my investigation has not found scholarly peer-reviewed literature investigating faculty development on trauma in higher education, with the exception of a dissertation by Doughty (2018). The Doughty study specifically examined and found that participation in trauma-informed professional development

increased faculty knowledge of trauma and informed educational practices. The Doughty research did not, however, focus on the science of trauma as a critical informational element.

An interdisciplinary approach, including a science perspective, is likely the best approach to address trauma, as well as instructional inequities of those affected by trauma. Hook and Farah (2013) found that provided with an understanding of the biopsychology behind students' "misbehaviors" teachers indicated that they able to change their reaction resulting in improved student behaviors. The Massachusetts Advocates for Children had become aware that the high number of children who were expelled or suspended from school came from home environments where the children were subjected to home violence. The response to intervene required collaboration between experts from the areas of education, psychology, law, and neurobiology (traumasensitiveschools.org). An interdisciplinary approach can bring awareness of the inequities in the educational system and bring improvement that can deepen students' connections to school (Dutro & Bien, 2014). The AAC&U identifies in its mission statement the need to "provide ALL college students with the high-quality learning they need to succeed and thrive" (www.aacu.org/about/strategicplan). However, the very premise of meeting the needs of all students requires finding a common denominator among all students. A biopsychological approach to understanding learning is best able to find such a common denominator.

Neuroimaging capabilities are continually enhancing information about learning and emotions (Tyng et al., 2017). Tyng's research reinforces concepts previously stated in this paper that learning is an individualized activity. What drives learning is interest, which motivates the individual to seek out and "learn things that they need, crave and desire" (p. 1454). For these researchers, neuroimaging will lead to the development of effective educational curricula for both the traditional classroom and the "virtual" technologies. This use of technology may be

especially helpful for students for whom face-to-face contact may be too overwhelming and who may have a need to reduce social interactions.

Neuroscience research conducted by Schroder et al. (2017) found a “growth mindset” to be an act of resilience. Schroder et al. (2017) stated, “Individuals who believe intelligence is malleable (a growth mindset) are better able to bounce back from failures than those who believe intelligence is immutable.” For students who would prosper in a less authoritative environment, an understanding of biopsychology may help faculty adopt alternative curricula, such as project-based learning (PBL). PBL is a motivational teaching method that provides students ownership in their learning. It is an individually tailored and inclusive approach (Tiwari, Arya, & Bansal, 2017).

Finkelstein et al. (2016) reported a significant revolution in higher education, a reconstruction of the professoriate that has taken away the freedom and power to address many societal forces affecting students. According to Finkelstein, faculty no longer have the power that they once held. Therefore, any research or program designed to assist faculty must consider the forces that might aid or abet a successful implementation of such a program. The information must be gathered that would be beneficially instructive. The trauma-informed plan presented by Hoch et al. (2015) suggests the following: 1) all staff and students should participate in the trauma-informed model, 2) annual training should be incorporated, and 3) faculty and staff should be offered in-person training. Included in this approach would be the involvement of administrators and general staff.

In the current era of faculty development, it is unclear what college faculty do know, or the extent of a professional development program necessary to inform faculty regarding the

biopsychological effects of trauma on learning for trauma-informed instructional and interactive practices.

Summary of the Literature Review

This review summarized scholarly literature on changes in higher education relating to faculty responsibilities, the student population, and trauma research. The literature shows that there has been a shift in faculty duties. These responsibilities detract from time spent on students and classroom instruction. Concurrent with this shift is data from the ACEs Study which has brought about an awareness of the prevalence and the impact of trauma on health. Research also indicates a changing student population attending college, a population whose members are likely to have a history of traumatic experiences. There is evidence that suggests a relationship between trauma and an increase in the student dropout rate.

This chapter defined trauma and clarified the various types of trauma, including their commonalities and differences. The review presented trauma-related behaviors that could affect student learning and interfere with instructional practices. The research reviewed studies on the biological impact of trauma as it relates to the physical, mental health, and cognitive well-being of the student. Research, though limited, indicates that biopsychological knowledge helps in understanding student behaviors and modifying classroom practices in PreK–12 classrooms. Literature was presented on the overall effectiveness of faculty professional development programs in higher education. However, only one study was found on the effectiveness of trauma-informed programs at the higher education level. No studies were found by the researcher that investigated biopsychological knowledge of faculty to determine the contributions of science in understanding trauma-related behaviors or to classroom practices at the college level. This literature review provided the scholarly support for this research project, which aimed to support

faculty and, ultimately their students by focusing on the biopsychological aspect of trauma and determining its effectiveness in understanding student behaviors and informing instructional practice.

CHAPTER III: METHODOLOGY

Introduction

Chapter III describes the specific methods chosen and applied in this research paper. The components of this chapter include the research design, recruitment procedures, including the sample, population and context, educational interventions, and data collection. Additionally, the variables are conceptualized, and the survey instrument and the analytic design are described. The section concludes with assumptions and limitations related to the methodological plan.

Research Design

This study employed a quantitative, non-experimental treatment and comparison group design. The design was loosely based on the dissertation of Michael Rossi (2002), “The Effect of an Educational Intervention on Faculty and Administrator Knowledge and Attitude to Student Course Evaluations.” The study conducted by Rossi investigated faculty and administrators’ knowledge and attitudes, and the effectiveness of a workshop focused on student course evaluations. The current study differed in content as it assessed the effectiveness of a trauma-informed professional development session on biopsychological knowledge, attitudes, beliefs associated with trauma, and learning. Factors that could facilitate or impede attendance or continued participation in a similar or a follow-up intervention were also investigated.

The plan included two groups, a treatment group, which received an educational workshop, and a comparison group, which attended a non-trauma-related workshop. Each group was administered the same pre- and post-workshop survey (the “Study on Trauma” post-survey is posted in Appendix A). A comparison group was used to assess whether changes in knowledge, attitude, or practice of the treatment group could be due to a maturation effect, which

is defined as the passage of time (Ohlund & Yu, n.d.). For this study, the maturation effect is interpreted as the passage of time between the pre- and post-workshop surveys.

Study Participants

The participants sought for this study were higher education faculty drawn primarily from a four-year, private, not-for-profit university located in New Jersey. Additionally, faculty from nearby New Jersey colleges who were members of a faculty development LISTSERV, maintained by the host university's director for the Center for Faculty Development (CFD), received the invitation to the workshops. The data indicate that 244 faculty attended CFD workshops for the academic year 2018–2019. Because recruitment requests for the trauma-informed workshops were sent out separately, the 34 faculty who participated in the trauma-informed workshop are not included in the CFD figure. The hosting university has a Carnegie Classification of Doctoral Universities: Moderate Research Activity (NCES, 2017) and has three campuses, including a medical school and law school. NCES 2018–2019 data indicated that the total student population was 10,162, including an undergraduate student population of 6,136 and a first-time, first-year student enrollment of 1,483 with an average incoming student SAT score of 1,230.

An initial estimate of an ideal minimum number of faculty participants was calculated at 160 based on a desired 10% participation rate of 1,300 university faculty (488 full-time faculty, 587 part-time faculty, 99 graduate assistants, and 78 instructional staff), and approximately 300 members of three faculty LISTSERVs provided by the director of the CFD. The demographic faculty data for the host university were retrieved from the National Center for Educational Statistics (NCES, 2018). G*Power (Faul, Erdfelder, Buchner, & Lang, 2009), a software program readily available online at no cost, was utilized to determine an ideal sample size based

on statistical power, also known as *a priori* power analysis, to determine sample size. Although the original desired count included faculty from the LISTSERV, the invitations were not distributed by the researcher or the director of the CDF; therefore, the researcher could not verify that the LISTSERV faculty received the email invitations. Configured for a two-group comparison scenario, the calculation utilized the conventional significance level of alpha (.05) and a power of 0.80. A medium effect size of 0.395 was determined using Cohen's *d* for *t*-test calculations (Cohen, 1988).

To recruit participants, an invitation to attend the intervention workshop, "Trauma-Informed Care on College Campuses," was announced by email on three dates in 2018, October 9, 15, and 22. These invitation emails were distributed through the Seton Hall University Office of the Provost on behalf of the College of Education and Human Services (COEHS) and the Center for Faculty Development (Appendix A). The email list consisted of only the 488 full-time faculty. The invitation requested an RSVP to confirm the registration. Registrations were acknowledged by the office of the COEHS. Email reminders were sent to the registrants the day before each workshop. The first trauma-informed workshop was conducted on October 23, 2018, and was attended by full-time faculty. The October 24 workshop was attended by full-time and part-time faculty. During the introduction, the researcher became aware that part-time faculty participants in the counseling department had been invited to the workshop by a full-time faculty member. The January 18, 2019 trauma-informed workshop included full-time faculty and part-time teaching assistants (TAs). The TAs were encouraged to attend by the university's writing lab director. The February 27, 2018 trauma-informed workshop, which was conducted as part of a curriculum and instruction course, included both full-time and part-time faculty from various disciplines.

Upon entering the room where the workshop was conducted, workshop registrants were greeted by the researcher and invited to participate in the study. Attendees who expressed interest in participating in the study were given a packet with the pre- and post-workshop surveys and received a copy of the written procedures, which included the consent statement (Appendix B). For all workshops, participation was presented as voluntary. As per the revised Institutional Review Board (IRB) (July 19, 2018) regulations, completion of the survey indicated consent. The written procedures were to be kept by the recipients for their records. The pre- and post-workshop surveys were printed on different colored paper to make them distinguishable for the convenience of the study participants. Of the six faculty who attended the first workshop, only two completed sets of the survey were returned, which was due to either the late arrival or the early departure of the attendees. The second workshop resulted in six sets of completed pre- and post-workshop surveys for a total of 8 completed surveys.

In order to recruit a greater number of participants for the trauma group, another “Trauma-Informed” workshop was announced in mid-December to be conducted on January 18, 2019. The same email distribution procedures were followed, as were conducted for the first round of trauma-informed workshops. This resulted in an additional 17 participants completing the pre- and post-workshop surveys. One last workshop was conducted on February 27, 2018. Those who participated in that session were faculty attending a curriculum and instruction development program. From this group, an additional 11 participants completed the surveys. Of these respondents, two indicated that they were employed in a non-teaching capacity. Their data were eliminated resulting in a final total of 34 faculty participants in the treatment group. The same procedures for the distribution of materials and processes were followed, as were conducted for the first round of workshops.

Recruitment of the comparison group came from faculty development workshops sponsored by the CFD at Seton Hall University. A list of the 2018–2019 professional development workshops (Appendix D) was emailed through the Office of the Provost at the end of September. RSVPs were requested and forwarded to the researcher by the director of the CFD. Registrants for the workshop titled, “Lessons from the Best Teachers Summer Institute & Lessons from the National Survey of Student Engagement (NSSE)” were sent an email by the director with an invitation to participate in the study (Appendix E). The workshops were scheduled for October 22 and repeated on October 23, 2018. The hours for both were 9:30 a.m. to 11:00 a.m. Faculty members who indicated they were interested in participating were emailed an anonymous link to the survey by either the researcher or the CFD director. At the end of the workshop, those who had completed the pre-workshop survey were emailed a link to the post-workshop survey. For both sessions, there was a total of 28 attendees, 14 per session. The recruitment for participation in the current study for the comparison group resulted in a total of 5 faculty completing the pre-workshop survey. Four of these participants completed the post-workshop survey. For all comparison group surveys, the invitation to participate and the preface to the emailed survey included a consent form stating that participation was voluntary and that completion of the survey indicated consent to participate in the study.

Coordinating with the January 18, 2019 treatment group intervention, additional participants for the comparison group were sought. Faculty who had registered for a writing retreat on January 14 and 15, 2019 received an email invitation to participate in the study. A total of 26 faculty had registered and attended for the writing retreat. For the current study, nine faculty responded and completed the pre-workshop survey. At the end of the retreat, those who completed the workshop were emailed links to the post-workshop survey followed by two

successive reminders. Three out of the nine participants completed the post-workshop survey. For the comparison group, 14 pre-workshop surveys were completed and seven post-workshop surveys completed. In consultation with the CFD director, a third round of gathering comparison group data was not conducted due to the difficulty in acquiring participants attending faculty development workshops.

Educational Interventions

The initial workshops were presented by Amy Hoch, Psy.D., Rowan University, NJ, on consecutive days, October 23, from 3:00 p.m. to 6:00 p.m. and October 24, 10 a.m. to 1:00 p.m. The workshop “Trauma-Informed Care on College Campuses” had been initially presented at the annual meeting of the American College Health Association, Orlando, FL, May 15, 2015. Dr. Hoch, a co-author of that presentation, modified the original PowerPoint and materials for the current study. Dr. Hoch presented the October and January presentations. However, she was unable to present the February workshop. Psychotherapist Lindy Judd, MSW, LCADC, a trauma therapist, completed the last round of presentations using the same PowerPoint and materials as presented by Dr. Hoch. The workshops offered in October for this study were three hours long. In discussion with attendees of the first two workshops, in an attempt to increase attendance, the workshop was shortened to two hours, although many attendees remained for continued discussion for all sessions.

The trauma-informed workshop included a PowerPoint presentation and lecture, discussion, and case study examples. Before presenting the PowerPoint, the researcher introduced the workshop presenter. For each workshop, the presenter engaged in an introductory period where attendees briefly shared information such as employment status (full-time or part-time) and their primary discipline.

The PowerPoint provided a general overview of trauma, including its prevalence and how awareness of trauma has increased. Information about trauma-informed core values was presented. For example, trauma-informed programs utilize a systems approach, which engages all students and staff in an educational process. The content included practical ways for faculty to help students, which included a discussion of resources available to faculty on their campuses. To facilitate further discussion, a handout was distributed which described three case studies. The shortened sessions maintained a slightly faster-paced introduction. Only one case study was presented instead of the three that had been planned. Although there was much participation by the attendees in all of the sessions, the three-hour session allowed for more extensive discussions within the scheduled time frame. The researcher observed, however, that participants in the shorter workshops remained after the conclusion to continue speaking with the presenter. In the opinion of the researcher, who was present at all of the sessions, the substitute presenter, Lindy Judd, very closely followed the script as organized by the PowerPoint. Differences among the sessions are discussed further in Chapter V.

Data Collection

Upon consultation with multiple members of the research faculty at the host university, it was determined that a paper and pencil format would result in the highest response from the treatment group. In consultation with the host university's director for the CFD, it was decided to administer the survey to the participants of the comparison group in an online format. Responses were gathered from completed pre- and post-workshop surveys that had been administered, to the treatment group in pencil and paper format and online to the comparison group using Qualtrics survey software. (There was one exception where a treatment group participant requested and was administered the survey in the online format.) Responses that were omitted

by the participants were coded as 999, which identified the data as missing. Pre- and post-workshop surveys in both online and paper and pencil formats were coded with IDs to ensure that the same individual would be matched with their pre- and post-workshop surveys.

Upon registration to a workshop, participants in the comparison group were emailed an online version of the same pre-workshop survey. The survey was to be completed before attending a workshop not related to the treatment group intervention. Once the surveys were returned, and the non-intervention workshop was in progress, participants were emailed the post-workshop survey.

Conceptualizing the Variables

According to Weick (1995), instructional improvement involves an adjustment in knowledge, attitudes, and practices. The dependent variables were faculty knowledge, attitudes, and beliefs about practices (KAP) related to the biopsychology of trauma. In a review of a biomedical perspective of KAP surveys, Launiala (2009) stated that “knowledge” in KAP studies often contains two disparate components—knowledge and beliefs—where knowledge is based on scientific facts (e.g., biomedical information) and beliefs refer to customs or traditional ideas. Knowledge as a dependent variable for this study was conceptualized as a recall of biopsychological facts related to trauma.

Ten items were created to measure the dependent variable “knowledge.” The survey items inquired about the psychological and biological components associated with trauma. A psychologically related example was, “The ability to overcome stressful events is called _____?” (Resiliency). Examples of biologically-related questions were, “A person who has experienced trauma is likely to remain in a state of _____,” (hypervigilance) and “A person experiencing trauma can underreact due to _____, (opioids) the body’s natural pain killer.

Attitude is a conscious or unconscious position or opinion regarding a behavior or an event that sometimes has no connection to practice (Gumucio et al., 2011). For this study, the dependent variable “attitude” was defined as a belief regarding biopsychology as informative in recognizing the academic and social behaviors of students who have experienced trauma. Research indicates that teachers are better able to understand student behavior after attending brain-based professional development sessions (Hook & Farah, 2013). The statement that assessed this variable was, “I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma.”

Because independent observations of the participants were beyond the scope of the study, the dependent variable “practice” pertained to participant stated beliefs that classroom practices could be informed by biopsychological knowledge. According to Hoch (2015), examples of practices sensitive to students who experience trauma might include faculty awareness that social anxiety may affect participation in group projects, or that mentioning of “trigger warnings” in course syllabi could deter student disclosure of trauma. The statement that assessed this variable was, “I believe that knowledge about biopsychology informs my teaching practices.”

The independent variable was the intervention in the form of a workshop. The workshop contained case studies of student experiences of trauma and both non-science related facts as well as key biological facts about the human body’s reaction to trauma. The purpose of the intervention was to provide factual information in support of instructional practices as they relate to understanding academic or social behaviors associated with trauma. In part, the workshop information could dispel myths or correct inferences about student academic or social behaviors related to trauma.

Measuring the Variables

“Measuring the variables” pertains to incorporating values into the conceptualized variables to create quantifiable data. The variable “characteristics” included the categories of employment status, gender, academic rank, levels taught, years of teaching, and primary discipline. These variables were assigned values and were examined through descriptive statistics.

Knowledge items had four response choices, which included one correct answer, two distractor choices, and an “I don’t know” choice. Distractor responses are incorrect alternatives intended to be plausible for respondents with lower knowledge (Testa, Toscano, & Rosato, 2018). The distractor items selected by the researcher were based on information stated in scholarly literature, misperceptions observed by the researcher in general conversations, and the overall frequency of the items’ appearance in the media. In the scoring of the survey items, the response of “I don’t know” was considered the same as an incorrect response indicating a lack of knowledge. To more accurately assess knowledge, respondents were asked to respond to Question 23, “In the past two years, not including this year, have you attended a workshop or have read literature on trauma?” The response choices for Question 23 were “yes,” “no,” and “unsure.”

The metrics of the dependent variables of attitudes and practices were summed up according to their group (treatment and comparison) and then totaled for an aggregate score. The questions and formats followed recommendations from the book *Survey Methodology*, which recommends that attitudinal questions use a five-point Likert scale and include the option of “neither agree nor disagree” and the use of closed-ended items (Groves et al., 2009). For the

variables of attitude and beliefs about practice, participants were asked to respond to two statements using a five-point Likert scale of “strongly disagree, “disagree,” “

neither agree nor disagree,” “agree,” or “strongly agree.” The attitude item was, “I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma.” The practice-oriented question was, “I believe that knowledge about biopsychology informs my teaching practices.”

The two questions that sought to understand factors that could alter or hinder participation in the current or future workshop were:

1. What factors do you feel may facilitate engagement in further exploration of the biopsychology of learning and trauma?
 - A. Time compensation
 - B. Monetary compensation
 - C. Other (Please specify): _____
2. What factors do you feel may interfere in further exploration of the biopsychology of learning and trauma?
 - A. Time compensation
 - B. Monetary compensation
 - C. Other (Please specify): _____

The post-workshop survey contained an additional item for assessing the effectiveness of the workshop. The survey item, “After attending this workshop, I believe my knowledge about working with students with trauma has increased.” was assessed on a five-point Likert scale.

Responses were tallied within groups and in aggregate.

Survey Instrument

Limited research with a focus on the impact of biopsychological knowledge related to trauma has been conducted. While trauma-informed assessments have been developed, such as the “The Clinical Adverse Childhood Experiences Questionnaire” (Murphy et al., 2016) and the “Attitudes Related to Trauma-Informed Care” (ARTIC) scale (Baker, Brown, Wilcox, Overstreet, & Arora, 2016), these instruments assess misconceptions and attitudes associated with trauma. The ACEs Questionnaire and the ARTIC do not assess biopsychological knowledge or the attitudes or beliefs that biopsychological knowledge is a key component in understanding trauma, which is the focus of this study. This lack of an appropriate survey instrument required the construction of an original survey instrument.

The pre-workshop survey consisted of 25 items divided into five (5) sections. KAP items were found in sections 1, 2, and 3. Section 4 addressed factors that could facilitate or interfere with attending a trauma-informed workshop. Section 5 included demographic information.

The post-workshop survey consisted of 28 items. Three items were added to be an additional evaluation of the workshop: “After attending this workshop I believe my knowledge about working with students with trauma has increased.”, “After attending this workshop, I am interested in learning more about trauma-informed classroom practices.”, and “After attending this workshop I believe that knowledge about biopsychology has increased my understanding of student behaviors.”

Initially, twenty items were prepared for assessing knowledge. These items were gathered from trauma literature and the presenter’s PowerPoint presentation. Other sources were used to verify the content. These sources included peer-reviewed articles or trauma literature distributed by organizations such as SAMHSA. Considering the effects of survey fatigue, the list of twenty

knowledge items was pared down to ten knowledge items. Survey fatigue or respondent fatigue occurs when participants become tired of the survey task (Lavrakas, 2008). The longer the amount of time spent participating in a survey, the more likely a respondent will not complete the survey (Porter, Whitcomb, & Weitzer, 2004).

Reviews by content experts provide an essential perspective on item development (Groves et al., 2009). Thus, a panel of survey experts in the Department of Higher Education at SHU reviewed the items and survey design. The survey was then administered in paper and pencil format to four psychotherapists with expertise in trauma, and a former Rider University faculty member who reviewed the survey for clarity, readability, response accuracy, and appropriateness of response distractors. Eighty percent of the knowledge items were answered correctly. All the survey items were answered correctly by at least two of the panel members.

Qualtrics survey software was used as the delivery instrument for the survey. The Qualtrics online platform offered the capability for the survey to be administered via computer, laptop, and smartphone in addition to the paper-pencil format.

Data Analysis Methods

Analysis of the data included the use of descriptive statistics for assessing the characteristics. Frequency data were reported either by counts or by percentage, and the mean, *SD*, median, mode, and range were listed. To visualize the data, Tables 1 through 4 were constructed to report the characteristics of academic rank, levels taught, years taught, and primary discipline taught. Table 5 contains the responses assessing the recency and engagement of faculty in reading or attending a trauma-informed workshop.

The group size for the comparison group was considered small, and the differences between the group sizes were unequal with the treatment and comparison group sizes of 34 and

14, respectively. Small sample sizes and unequal variances affect the significance of the statistics (Thiese & Ronna, 2016) and statistical power (Ellis, 2010). The effects of sample-size and group differences were confirmed using Levene's test for equality on the characteristic "levels taught." Therefore, inferential statistics such as the *t*-test or chi-square test of independence were not used to compare the treatment group and the comparison group.

When reporting data, to ensure confidentiality, any categories with only one participant were merged with another group. Descriptive statistics included numeric frequencies, percentages, and measures of central tendency and dispersion, including standard deviation (*SD*).

Question 1

Question 1 involved an analysis of baseline data on each of the dependent variables of knowledge, attitude, and beliefs about practice. The data for variable knowledge were analyzed through descriptive statistics of mean scores, *SDs*, range, and percentages (Table 6). Figures 1 and 2, for both groups, provide the dispersion of scores by the percentage of occurrence on the pre-workshop knowledge scores. Attitudes and beliefs about practice were analyzed through mean scores, *SDs*, and percentages. Tables 6 and 7 were created to report the percentages associated with the Likert scale responses.

Question 2

Question 2 sought to determine whether attending a trauma-informed workshop was effective in increasing biopsychological knowledge, enhancing faculty attitudes that this type of knowledge is informative in understanding student behaviors, and enhancing beliefs that this knowledge can inform instructional practice. For the assessment of knowledge, means, and *SD* scores for both groups were calculated and are provided in Table 8. A paired samples *t*-test was

conducted to determine whether there was a change between pre- and post-survey knowledge scores.

Attitudes and beliefs about practice were assessed using the pre- and post-workshop Likert scale data. The two sets of data are presented in Tables 9 and 10. Paired samples *t*-tests were computed by group to assess whether a trauma-informed workshop was effective in influencing attitudes about student behaviors and beliefs about practices.

Question 3

Question 3 sought to identify factors that could impact attending workshops to learn more about trauma and biopsychological foundations of trauma as they relate to the educational setting. Faculty were asked to prioritize their responses to the options of “Time compensation,” “Monetary compensation,” and “Other (Please specify).” Responses were reported by frequency of comments (Table 13)

Assumptions and Limitations

During the planning stage, an assumption was made that recruiting an adequate number of participants for the study might require additional workshop sessions. As a precaution, an option for additional workshops was included in the original plan for the study. The workshop presenter was asked in advance and agreed to present the additional two workshops if necessary. After offering four separate workshops, it was determined that the ideal sample size would not be obtained. In total, 34 participants were gathered for the treatment group. The total for the comparison group was 14, of which seven participated in the post-workshop survey. The initial estimate was based on 10% of the total number of university faculty and members of the LISTSERV community.

In total, there were four administrations of the treatment workshop. Dr. Hoch conducted the first three, and in Dr. Hoch's absence, the final workshop was led by Lindy Judd, MSW, LCADC, a trauma therapist. There were inherent problems likely to occur because of the differences among workshop administrations. For consistency, the same PowerPoint and materials were used to convey the intervention material. However, factors such as different presenters, different audiences, and different periods likely affected the resulting data. The presenters, although experts in the field of trauma, had different backgrounds, which could have resulted in an emphasis on different aspects of the presentation material and the responses to participant questions. Also, instructor knowledge can be altered between workshops as new research about trauma can provide an updated perspective that the presenter may unknowingly add to a subsequent presentation. Events occurring between administrations can change the knowledge and level of interest of the instructor and participants. For example, trauma events can raise emotions and create a rise in interest, which could create an overall higher group interest. The presenter can be influenced by observations and the questions of participant reactions from previous workshops. This may cause the content to be rephrased, added to or omitted. Therefore, all four sessions could not be considered identical in content.

The recruitment processes may have created a limitation in the study. The assumption made by the researcher was that all participants in the treatment group chose to attend the workshop out of an interest in the subject of students and trauma. The last treatment group consisted of graduate students of which 9 out of the 11 members held a full- or part-time faculty position. Concerns can arise in research with the use of students as study participants. Students can feel captive if they refuse to participate. For example, they may fear repercussions, such as a downgrade on their performance assessment and being given fewer learning opportunities

(Ferguson, Yonge, & Myrick, 2004). Participants in the current study were not involved in a situation where the course faculty member would engage in unethical practices. Students in the curriculum instruction class were informed about the option for a trauma-informed presentation, which was relevant to their course work. One month before the presentation, the researcher visited the class to assess interest. Even though the students were interested in the workshop, there was no obligation to participate in the survey. Additionally, there was no grading or evaluation associated with participation in the survey.

The treatment group was not aware that the workshop would entail participating in a pre- and post-workshop survey as part of a research study. The effect of being invited to participate in the study upon arrival to the workshop may have evoked an adverse reaction and affected the responses to survey items. The comparison group did not register for a trauma-informed workshop. Therefore, it was not known whether an interest level existed about trauma or whether, for example, the comparison group members felt an obligation to participate in student dissertations. The attrition rate of 50% for the comparison group regarding participation in the post-survey workshop suggests a different level of interest when compared to the treatment group, which had a 100% completion rate on the pre- and post-workshop surveys.

As discussed earlier, the small number of participants in the comparison group created a disproportionate representation of participants between the treatment and the comparison groups, affecting the ability to engage in inferential statistical analyses. Levene's test for equality of variances confirmed that the variances were statistically different. Not being able to recruit at least the desired sample size for the treatment and comparison groups affected the statistical power of the study. The rubric in statistics is that, the higher the N , the greater the statistical power: "Statistical power is the likelihood that a study will detect an effect [an outcome] when

there is an effect there to be detected” (Ellis, 2010). Without being able to obtain the effect size calculated for this study, it cannot be assumed that the data represent or are similar to the larger population of faculty.

Another limitation was that no follow-up occurred to determine whether knowledge gained from attending the trauma-informed workshop was retained. After attending the trauma-informed session, it was hoped that the participants would apply or reflect upon knowledge acquired. A follow-up email was sent to the first round of participants one month after the workshop. One participant from the treatment group responded. To conduct the follow-up survey for all participants extended the timeline of the study. The extended time for the contingency plan was impacted by holidays in November and December. The final trauma workshop was conducted on February 27, 2019.

Another limitation was that the actual practice of instruction could not be measured. Therefore, the variable practice was defined as a “belief” that knowledge of biopsychology informs instruction. Measuring teaching practice goes beyond attending a faculty development workshop. It requires classroom observations of the teacher and the students (Condon & Iverson, 2016).

The lack of response to the follow-up survey inhibited understanding whether the benefits of increased knowledge, increases in favorable attitudes, and positive beliefs regarding impacts on instructional practice gained from the workshop could be sustained over time. It was hoped that the participants would return to their classes to reflect upon and apply what they had learned. Although the treatment group’s post-survey data showed gains in three areas, there would likely be a fade-out effect. For this study, the fade-out effect was defined as the loss of knowledge and the lessening of favorable attitudes and beliefs about practice. Recent brain research indicates

that knowledge gained in an intervention is not likely to be sustained in an isolated environment (Protzko, 2015). Since no follow-up was conducted, the degree of fade-out effect could not be determined.

CHAPTER IV: DATA ANALYSIS AND FINDINGS

This study investigated higher education faculty regarding their knowledge, attitudes, and practices connected to the biopsychological foundations of trauma and their relevance to understanding student behaviors and instructional practices. Additionally, the study examined whether attending a trauma-informed workshop would enhance knowledge, attitudes, and practices. A third part of the study sought to uncover factors that could support or inhibit faculty from attending a trauma-informed workshop. Data for this study were gathered from pre-workshop and post-workshop surveys. The study used a non-experimental model that employed a treatment group of faculty who attended a trauma-informed workshop. A comparison group was recruited consisting of faculty who participated at a non-trauma-related faculty development workshop.

Sample Characteristics

Demographic information was gathered on all 48 participants for the purpose of assessing each group's characteristics. Similarities and differences could then be identified between the treatment ($n = 34$) and the comparison group ($n = 14$). The following data describe the characteristics of the participants' employment status, gender, academic rank, levels taught, years teaching, and their primary discipline.

An examination of the distribution of "employment status" indicated that the treatment group was divided evenly with 50% (17) faculty who were employed full-time and 50% (17) who were employed part-time. All 14 participants in the comparison group were employed full-

time. The gender composite for the treatment group consisted of 30% (10) males and 70% (24) females ($M = 1.71$, $SD = .462$). The comparison group included 36% (5) males and 64% (9) females ($M = 1.64$, $SD = .497$). The means of the two groups appeared similar.

Table 1 reports the distribution of academic ranks for the treatment and comparison groups. To avoid the identification of any one person in the comparison group, the categories of Instructor, Lecturer, and TA were merged into the Assistant Professor category. Frequency data for the treatment group indicated an academic rank distribution spread across all ranks. The comparison group had one person representing a non-professorial rank. Both groups had an equal number of faculty in the upper ranks of full, associate, and assistant professors.

Table 1

Academic Rank

<i>Academic Rank reported by group, numeric frequencies, and percentages.</i>		
	Treatment	Comparison
Rank	<i>n</i>	<i>n</i>
Full Professor	3	3
Associate Professor	6	6
Assistant Professor	4	5
Instructor	10	-
Lecturer	5	-
Teaching Assistant	6	-
Total	34	14

Note. Percentage error is due to rounding.

Frequency data and mean scores for the characteristic “levels taught” are reported by group and shown in Table 2. The numeric data indicated that the treatment group ($M = 1.24$, $SD = 1.06$) taught slightly lower-level courses (1st, 2nd, and 3rd year courses) than did the comparison group ($M = 2.14$, $SD = .76$). To assess whether the unequal sample size between the treatment and comparison groups would affect the significance of the statistics, Levene’s test for

equality of variances was run. In SPSS, Levene's test is provided in the independent *t*-test output. The output confirmed the unequal variances, $F(46) = 9.175, p = .004$. If the *p*-value is less than .05, the variances are unequal (Brown & Forsythe, 1974).

Table 2

Levels Taught

Level Taught	Treatment Group ($n = 34$)	Comparison Group ($n = 14$)
	<i>n</i>	<i>n</i>
1st Year	23	9
2nd Year	15	11
3rd Year	13	13
4th Year	12	11
Certificate	5	4
Graduate	14	11

Table 3 indicates the measures of central tendencies for “Summary of Years Teaching by Groups.” The data show the treatment group represented faculty with fewer years of teaching.

Table 3

Years of Teaching

<i>Number of years teaching by group reported by measures of central tendency</i>			
Group	Mean (<i>SD</i>)	Median	Mode
Treatment Group ($n = 34$)	10 (11.7)	3	2
Comparison Group ($n = 14$)	17 (7.2)	17.5	10, 15, 20

Figures 1 and 2 provide a summary of primary discipline clusters. Several discipline clusters contained single participants. To ensure confidentiality, the third cluster merged these disciplines. The percentage data indicates that participants from the treatment group had nearly twice the representation in the arts, humanities, education (AHE) cluster than did the comparison group. The comparison group participants were evenly distributed among the clusters.

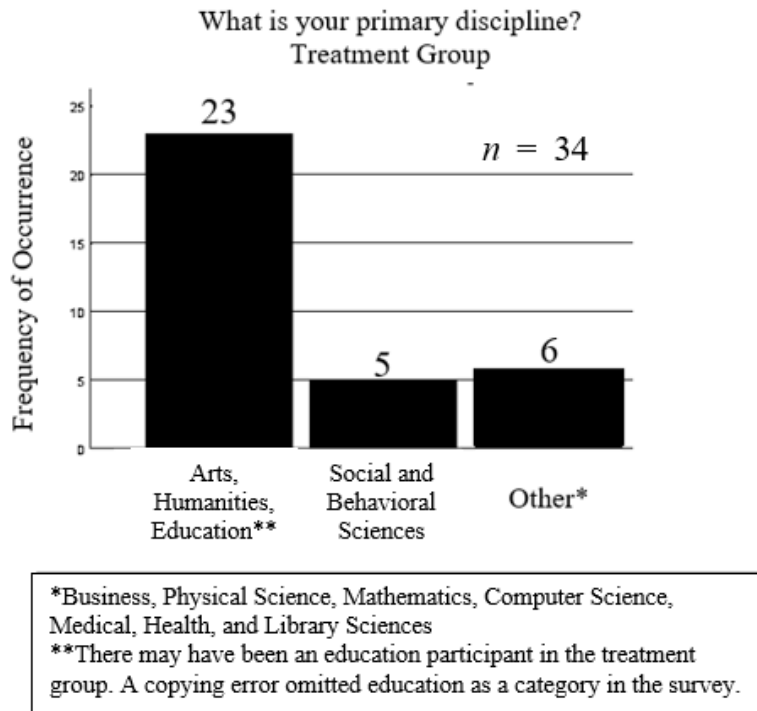


Figure 1. Discipline - Treatment Group

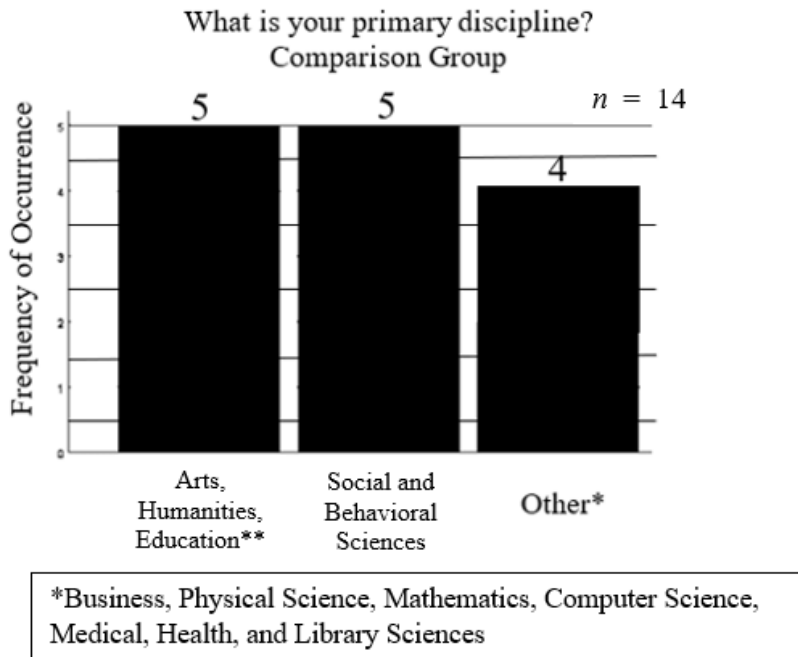


Figure 2. Discipline - Comparison Group

A question added to the demographic section of the survey sought to determine whether faculty had previously attended a workshop or read literature on trauma. The results are reported in Table 4. In aggregate, 72% of faculty indicated that they had not participated in a workshop or read literature on trauma within the last two years.

Table 4

Attended a Workshop

<i>Frequency data reported by numeric frequency and percentage for the aggregate group to the question, "In the past two years have you attended a workshop or read literature on trauma?"</i>		
Group	Yes	No
Aggregate* (N = 46)	27%	72%
<i>Note. Two respondents had indicated that they were "unsure." These responses were coded as missing. *Percentage error is due to rounding.</i>		

In summary, descriptive statistics described demographic similarities and differences between the treatment and comparison groups. Differences were seen between the groups in sample size and five out of the six categories. The initial sample size of the treatment group ($n = 34$) was 2.4 times larger than the comparison group ($n = 14$).

The data indicated that faculty had not attended or read about trauma-informed practices. The groups were found to be similar in gender distribution. The treatment group was divided equally into full-time and part-time employment status, while the comparison group participants were all full-time faculty. The treatment group represented faculty who taught lower-level courses and taught fewer years than those in the comparison group. The treatment group included faculty with non-professorial ranks, where the comparison group had one participant serving in the non-professorial rank. The treatment group represented a higher percentage of faculty within the discipline AHE cluster compared to the comparison group who were more

evenly distributed across academic disciplines. The high representation of the AHE cluster is problematic as it is less representative of the total faculty population.

Quantitative Findings

Question 1

The first question of this study focused on establishing a baseline for understanding faculty knowledge, attitudes, and beliefs about their practices related to the biopsychology effects of trauma on learning. The data were collected from the participants within groups who completed the pre-workshop surveys. The treatment group had 34 participants, and the comparison group had 14 participants who completed the survey.

Knowledge. To assess baseline knowledge, participants were asked to respond to 10 knowledge items on the pre-workshop survey prior to attending either a trauma-informed workshop (treatment group) or a non-trauma-informed workshop (comparison group). For each group, mean scores with their associated *SD* and range were calculated (Table 5).

Table 5

Pre-Workshop Knowledge

<i>Mean scores and SD reported by treatment and comparison groups based on pre-workshop survey responses to 10 knowledge items.</i>				
Group	Mean	SD	Range	<i>n</i>
Treatment	4.35	2.12	8	34
Comparison	4.57	1.40	5	14

Mean scores were derived from the number of correctly answered knowledge items. The mean scores indicated that faculty knowledge was below an average score of 50%. Figures 3 and 4 show the dispersion of group scores by the percentage of occurrence (the number of items answered correctly by participants). Figure 3 shows that, for the treatment group, the minimum

score was 1, and the maximum score was 9, resulting in a range of 8. The treatment group data shows that 6% (2 participants) of the treatment group answered nine knowledge items correctly, 6% answered eight knowledge items correctly, and 3% (1 participant) had seven correct responses. Conversely, 6% of the group answered 1 item correctly, and 12% (4 participants) answered two items correctly. Forty-five percent of the group answered three or four items correctly.

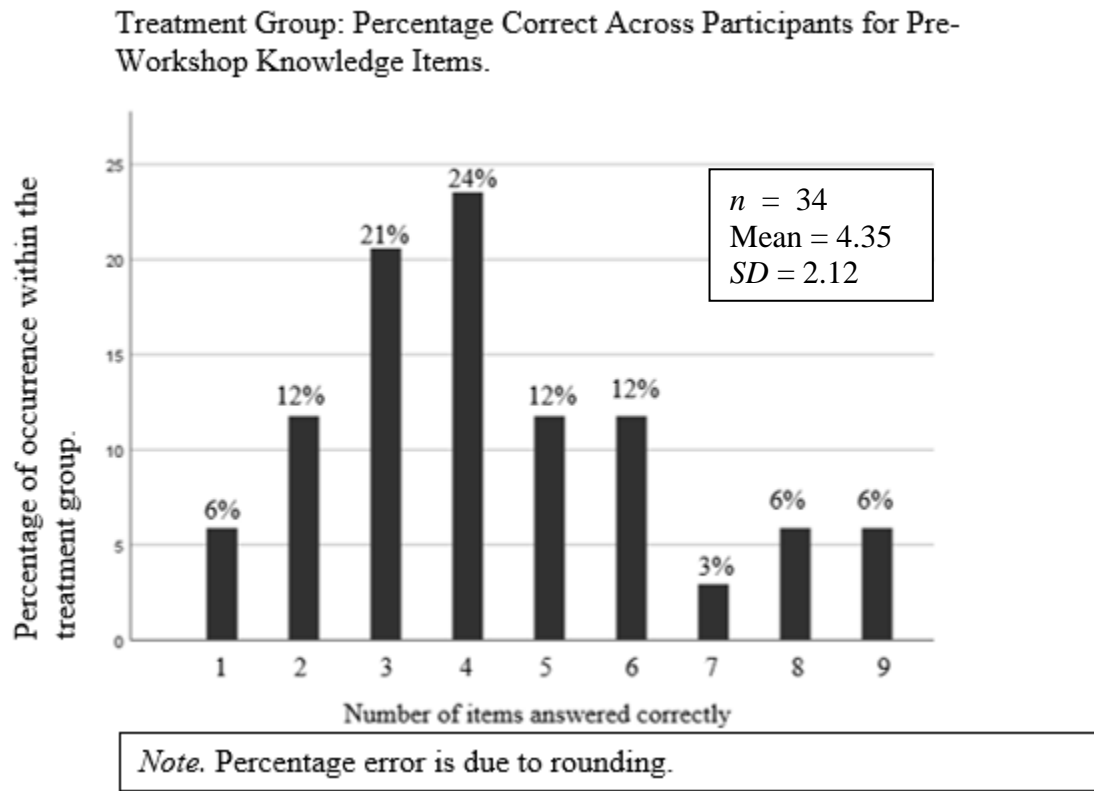


Figure 3. Knowledge-Correct-Treatment Group

Figure 4 indicates that 14% (2 participants) in the comparison group answered six and eight items correctly, and 86% answered five or fewer items correctly. The comparison group had a minimum score of three and a maximum score of eight with a range of five.

Comparison Group: Percentage Correct Across Participants for Pre-Workshop Knowledge Items

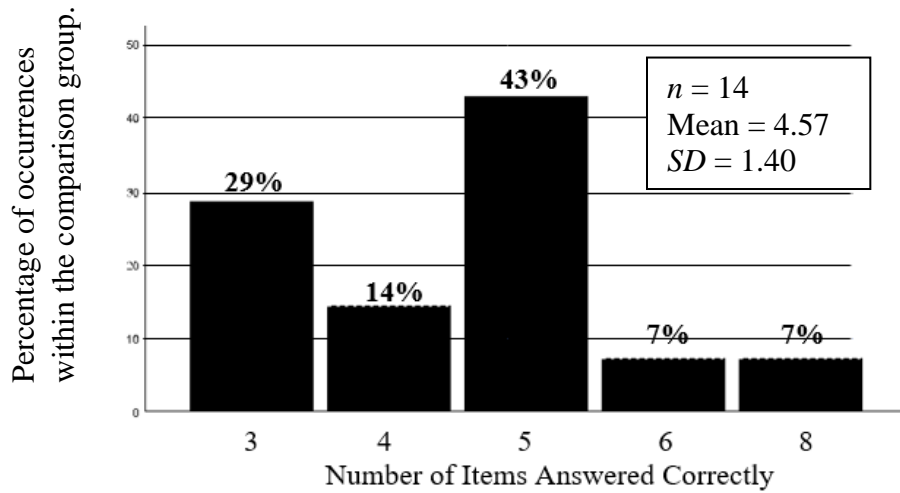


Figure 4. Knowledge-Correct-Comparison Group

The purpose of the assessment of knowledge items was two-fold. First, it was used to provide a baseline in the pre- and post-workshop analysis. Second, the data analysis could support or reject the hypothesis that faculty have an insufficient amount of knowledge about the biopsychological effects of trauma on learning. The data from both groups suggest that, while some faculty demonstrated a substantial amount of knowledge regarding biopsychology, for the majority of faculty, there was an insufficient amount of knowledge.

Attitude. Faculty attitudes were sought to gather baseline data about the faculty’s biopsychological knowledge as being useful in understanding student trauma-related behaviors. On the pre-workshop survey, participants were asked to respond to the statement, “I believe that knowledge about biopsychology informs my attitudes towards students who have experienced trauma.” A five-point Likert scale was utilized with items rated from “strongly disagree” to “strongly agree.” Table 6 provides a summary of frequency data and the mean scores for responses to the attitudinal question by the treatment and comparison groups.

Table 6

Pre-Workshop Attitude

<i>Responses on the pre-workshop survey to the statement, "I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma." Data are reported for each group. Numeric, percentage frequency data, and mean scores are shown.</i>		
Item Response # and item text	Treatment %	Comparison %
1. Strongly Disagree	9	14
2. Disagree	9	29
3. Neither Agree nor Disagree	18	14
4. Agree	44	29
5. Strongly Agree	21	14
Total	100	100
<i>Note.</i> Treatment group: $M = 3.59$, $SD = 1.18$. Comparison group: $M = 3.29$, $SD = 1.33$. Percentage error is due to rounding.		

Adding the percentages in the categories of agree and strongly agree, the data indicated that 65% of the treatment group respondents agreed or strongly agreed with the attitude statement. For the comparison group, 43% agreed or strongly agreed with the statement shown in Table 6. Therefore, the belief that biopsychological knowledge informs understanding of student behaviors was greater for the treatment group than for the comparison group.

Beliefs about practice. To assess faculty beliefs that biopsychological knowledge informs their instructional practices, participants were asked to respond to the statement, "I believe that knowledge about biopsychology informs my teaching practices." As in the previous question, a five-point Likert scale was employed. For the treatment group, 56% agreed or strongly agreed with the statement that biopsychology informs classroom practice. Fifty percent of the comparison group agreed or strongly agreed with this statement. Table 7 provides a summary of frequency data and the mean scores for responses to the attitudinal question by the treatment and comparison groups.

Table 7

Pre-Workshop Practice

<i>Responses to the statement, "I believe that knowledge about biopsychology informs my teaching practices." Data are reported by group. Numeric, percentage frequency data, and mean scores are shown.</i>		
Response # and Choice	Treatment	Comparison
	%	%
1. Strongly Disagree	12	14
2. Disagree	21	0
3. Neither Agree nor Disagree	12	36
4. Agree	47	43
5. Strongly Agree	9	7
Total	101	100
<i>Note.</i> Treatment group: $M = 3.21$, $SD = 1.23$. Comparison group: $M = 2.86$, $SD = 1.17$. Percentage error is due to rounding.		

In summary, responses from both the treatment and the comparison groups, on the pre-workshop survey, indicate that, on average, the participants answered fewer than 50% of the knowledge items correctly. The distribution of scores showed a wide range in the number of responses with some treatment group participants answering as many as nine items correctly and as few as one item correctly. The comparison group's correct responses ranged from eight to three correctly answered items. The data also indicated that 70% of faculty had not attended or read trauma-related literature within the past two years.

The treatment group, compared to the comparison group, held more favorable attitudes and positive beliefs about biopsychology for understanding student behavior, and for informing practice.

Question 2

The second question asked, "To what extent does offering a structured professional development program related to the biopsychological effects on learning, affect the knowledge,

attitudes, and instructional behavior of college faculty teaching students with trauma-related learning interferences?” Table 8 reports the pre- and post-workshop survey mean scores and their associated *SDs* for the treatment and the comparison groups.

Effectiveness of workshop on knowledge. The following section provides data on faculty pre and post-workshop survey responses to knowledge items.

Table 8

Pre- and Post-Survey Knowledge

<i>Mean scores and SDs reported for the treatment group based on pre- and post-workshop survey responses to 10 knowledge items (n = 34)</i>			
Group	Assessment	Mean	<i>SD</i>
Treatment	Pre-Workshop	4.35	2.12
Treatment	Post-Workshop	7.06	2.00
Comparison	Pre-Workshop	4.86	1.8
Comparison	Post-Workshop	5.00	1.73

A paired samples *t*-test was computed to compare faculty knowledge before and after attending a trauma-informed workshop. The treatment group data showed mean scores increased from the pre-workshop mean ($M = 4.35, SD = 2.12$) to the post-workshop mean ($M = 7.06, SD = 2.00$) and were found to be statistically significant; $t(33) = 8.04, p = .00$, indicating that the workshop was effective in increasing faculty knowledge regarding the biopsychological effects of trauma on learning. The difference in means was a 63% change.

The results of a paired-samples *t*-test for the comparison group indicated the difference in the mean of the pre-workshop scores ($M = 4.86, SD = 1.8$) and the mean of the post-workshop scores ($M = 5.00, SD = 1.73$) scores. The difference in scores was not statistically significant; $t(6) = -1.00, p = .36$. Therefore, for the seven participants in the comparison group who completed both the pre- and post-workshop survey, attending a non-trauma-related workshop was not effective in increasing biopsychological knowledge for the comparison group.

In summary, pre- and post-workshop analyses of the data indicated that the trauma-informed workshop attended by the treatment group was highly effective in increasing biopsychological knowledge of the trauma-informed workshop attendees. The data showed that, for the comparison group, attending a non-trauma-related workshop did not increase biopsychological knowledge of trauma. The research hypothesis posed that attending a trauma-informed workshop would be effective in increasing knowledge regarding trauma, and its impact on learning was thus supported.

Effectiveness of workshop on attitude. A hypothesis was advanced that the favorability of attitudes toward biopsychology in understanding student behaviors would be influenced by their level of knowledge. In the post-workshop survey, item number 11, “I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma,” was reassessed. The analysis was conducted by an examination of the frequency data and group means and is reported in Table 9.

Table 9

Pre- and Post-Survey Attitude-Treatment Group

<i>Numeric data results of the treatment group’s pre- and post-workshop responses to the statement, “I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma.” (n = 34)</i>		
Response Choice	Pre-workshop <i>n</i>	Post-workshop <i>n</i>
Strongly Disagree	3	4
Disagree	3	2
Neither Agree nor Disagree	6	3
Agree	15	17
Strongly Agree	7	8
Total	34	34

Note. Pre-workshop: $M = 3.21$, $SD = 1.23$. Post-workshop: $M = 3.68$, $SD = 1.14$.

As previously shown in Table 6, baseline data was established that showed that, for the treatment group, 65% of the participants indicated favorable attitudes that biopsychology could be informative in understanding student behaviors. Table 9 data show a small increase in favorability with the categories of agree and strongly agree, increasing from 22 responses to 25 responses. In the strongly disagree and disagree categories, the strongly disagree category increased by one response, and the disagree category decreased by one response. The neither agree nor disagree category was reduced from six points to three points. A visual inspection of the changes in responses is summed up as a small positive increase in favorability scores with three-point increases in the agreement category, whereas the disagree categories increased by one point.

A paired samples *t*-test was conducted on pre- and post-workshop attitudes of the treatment group ($M = 3.6, SD = 1.21$) with the post-workshop attitudinal scores ($M = 3.68, SD = 1.14$). No significant differences in favorability of attitudes were found; $t(33) = .45, p = .65$.

Of the seven comparison group participants that responded to the post-workshop survey, one participant did not respond to the attitude question resulting in $n = 6$. Pre- and post-survey frequency data and means are reported in Table 10. The post-workshop survey results showed a decrease of one point in the disagreement category and an increase of two responses in “strongly agree.”

Table 10

Pre- and Post-Survey Attitude-Comparison Group

<i>Results within the comparison group's pre- and post-workshop survey responses to "I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma." Numeric data are reported. (n =14)</i>		
Response Choice	Pre-workshop <i>n</i>	Post-workshop <i>n</i>
Strongly Disagree	1	1
Disagree	2	1
Neither Agree nor Disagree	1	1
Agree	1	0
Strongly Agree	1	3
Total	6	6
<i>Note.</i> Pre-workshop group: $M = 2.86$, $SD = 1.17$. Post-workshop group: $M = 3.5$, $SD = 1.76$		

A paired samples *t*-test was conducted on pre- and post-workshop attitudes of the comparison group ($M = 2.83$, $SD = 1.47$) with the post-workshop attitudinal scores ($M = 3.5$, $SD = 1.76$). No significant differences in the favorability of attitudes were found; $t(5) = 1.35$, $p = .235$. The difference in the pre- and post-workshop survey responses was not statistically significant even though the frequency data indicated a small increase in favorability of attitudes.

For both the treatment and the comparison group, changes in mean scores were not found to be significantly significant. Based on the data, the hypothesis that the favorability of attitudes would be influenced by their level of knowledge could not be supported or rejected.

Effectiveness of workshop on beliefs about practices. The third part of question 2 sought to determine whether attending the trauma-informed workshop would increase faculty beliefs that biopsychological knowledge informs instructional practices. It was hypothesized that attending a trauma-informed workshop would positively increase beliefs that such exposure is useful for informing instructional practices. Table 11 shows the treatment group's frequency data and their associated means for the pre- and post-workshop survey responses.

Table 11

Pre- and Post-Survey Practice-Treatment Group

<i>Treatment group results of the treatment group's pre- and post-survey responses to, "I believe that knowledge about biopsychology informs my teaching practices." Frequency data are reported numerically, and by mean scores. (n = 34)</i>		
	Pre-workshop	Post-workshop
	<i>n</i>	<i>n</i>
Strongly Disagree	4	3
Disagree	7	0
Neither Agree nor Disagree	4	7
Agree	16	16
Strongly Agree	3	8
Total	34	34

Note. Pre-workshop: $M = 2.86$, $SD = 1.17$. Post-workshop $M = 3.5$, $SD 1.76$.

The frequency data indicates that the positive beliefs of the treatment group were increased after attending the workshop. Additionally, although 33% (11) of the initial responses showed a negative belief on the pretest, after attending the workshop, only 9% (3) of the respondents' beliefs remained negative. There was a four point increase in the category neither agree nor disagree and a five point increase in the category of strongly agree.

A paired-samples *t*-test pre- and post-workshop evaluation was conducted on the treatment group's "beliefs about practices" based on the survey item, "I believe that knowledge about biopsychology informs my teaching practices." Results indicated that pre-workshop and post-workshop mean differences increased and were statistically significant ($M = 3.21$, $SD = 1.23$ and $M = 3.76$, $SD 1.10$, respectively, $t(33) = 2.23$, $p = .03$). These results suggest that attending the trauma-informed workshop increased faculty beliefs that practice could be informed by biopsychological knowledge.

Table 12

Pre- and Post-Survey Practice-Comparison Group

<i>Comparison group results for the statement, "I believe that knowledge about biopsychology informs my teaching practices" reported by numeric frequencies and mean scores. (n = 14)</i>		
	Pre-workshop	Post-workshop
	<i>n</i>	<i>n</i>
Strongly Disagree	1	1
Disagree	3	1
Neither Agree nor Disagree	1	1
Agree	1	2
Strongly Agree	1	2
Total	7	7

Note. Pre-workshop: $M = 2.71$, $SD = 1.38$. Post-workshop: $M = 3.43$, $SD = 1.51$.

The comparison group was assessed on the item, "I believe that knowledge about biopsychology informs my teaching practices." The data in Table 12 shows a decrease in two "disagreement responses," and a one response increase in both "agree" and "strongly agree" categories. Frequency data indicates that there was a difference in the pre- and post-workshop survey scores. However, a paired-samples *t*-test on the pre- and post-survey scores was conducted which indicated that mean differences were not statistically significant ($M = 2.71$, $SD = 1.38$ and $M = 3.43$, $SD = 1.51$, respectively, $t(6) = 1.70$, $p = .14$).

Based on the treatment group data, the research hypothesis that attending a trauma-informed workshop would positively increase beliefs that such knowledge would inform instructional practices was accepted.

In summary, the trauma-informed workshop was effective for the treatment group in increasing knowledge about the biopsychology of trauma. It could not be determined whether the increase in knowledge resulted in an increase in favorable attitudes that biopsychology can be informative in understanding student behaviors. The workshop was found to positively affect faculty beliefs that biopsychological knowledge can inform instructional practices.

Question 3

The third question sought to understand organizational or personal factors affecting the attendance of future trauma-informed workshops. The data were based on responses asked in the pre-workshop surveys gathered from the treatment and comparison groups. Response options included “time, monetary, and other” factors. Respondents had the option of selecting time and money as a singular choice. There was an additional “other” option which allowed participants to write in comments. Table 13 provides the aggregated group responses.

Table 13

Workshop Attendance Factors

<i>Factors reported affecting the attendance of future trauma-informed workshops for the aggregate (N = 48).</i>	
Factor	%
Time	48
Money	6
Time and Money	25
Other – with written responses	11
Other – no written responses	4
Missing responses	6

Note. Percentage totals may not add up to 100% due to rounding.

Table 13 shows that “time” was considered by 48% of the respondents to be the most significant factor that would affect attending more trauma-informed workshops. “Time and money” accounted for 25% of the responses. The written responses supported the emphasis on time with multiple mentions of scheduling and scheduling-related comments such as “Other tasks need attention,” and “Logistics, i.e., when its [sic] offered and fitting it into my schedule.”

Summary of Data Analysis

Sample Characteristics

This study recruited a sample of 48 faculty from a non-randomly sampled population. The sample consisted of faculty who registered to attend a trauma-informed workshop (the treatment group) and faculty who registered for a non-trauma-related workshop (the comparison group). The treatment group was 2.5 times larger (34 participants) than the comparison group (14 participants). The diverse group sizes and the small number of participants in the comparison group prohibited inferential statistical findings.

The treatment group consisted of both full-time and part-time faculty. The comparison group consisted of all full-time faculty. Sixty-eight percent of the treatment group was comprised of faculty from the category of the AHE cluster disciplines, whereas, the comparison group was equally distributed among all three categories of AHE, the Social and Behavioral Sciences, and the “Other” (Business, Physical, Computer, Medical and Health Sciences, and Mathematics). The treatment group consisted of participants of six faculty ranks, including the academic ranks of full, associate, and assistant professors, and the non-professorial positions of instructor, lecturer, and TA. Thirteen out of the fourteen participants in the comparison group held ranks within professorial levels. The treatment group averaged fewer years of teaching. The levels of teaching were similar for both groups as were the gender distributions within each group. A final question asked whether faculty had attended a trauma-informed workshop or read related literature in the past two years. The responses indicated that approximately three-quarters of the faculty survey had not received trauma-informed training within the two previous years.

Baseline Knowledge, Attitudes, and Practice

A baseline of biopsychological knowledge was established based on ten questions/items. A pre-workshop survey was conducted before all workshops to determine what faculty knew about the biopsychological knowledge of trauma. The variable knowledge was assessed based on ten items. The results indicated that faculty had an inadequate amount of biopsychological knowledge related to trauma. Mean scores for both the treatment and comparison groups were computed. For both groups, the mean scores on knowledge were below 50%. The range of responses indicated that some faculty were able to correctly answer a high number of questions. This lent credence to the validity of the survey instrument. Faculty were also asked whether they had attended a trauma-informed workshop or read literature on the subject within two years before attending the workshop associated with this study. Seventy percent of the faculty indicated that they had not. Though this was not statistically verified, the finding lends support to the hypothesis that faculty have not received professional development to the extent that they have sufficient knowledge regarding the biopsychological effects of trauma on learning.

Prior to attending a trauma-informed workshop, a majority (65%) of faculty (treatment group) stated that they agreed or strongly agreed that biopsychological knowledge informs understanding of trauma-related student behavior. Eighteen percent of the treatment group were neutral, and 18% disagreed or strongly disagreed. The faculty who registered to attend a non-trauma-related workshop were divided with 43% in agreement or strong agreement to 43% in disagreement or strong disagreement, and 14% indicated neutral attitudes regarding the benefits of this scientific knowledge.

Fifty-six percent of the treatment group held beliefs that biopsychological knowledge could inform instructional practice. One-third (33%) of the treatment group either disagreed or

strongly disagreed, and 12% were neutral. In response to this item, 50% of the comparison group reported either agreement or strong agreement, 36% were neutral, and 14% strongly disagreed.

Workshop Effectiveness on Knowledge, Attitudes, and Practice

Attending the trauma-informed workshop did appreciably increase faculty knowledge of biopsychology as it relates to trauma. The analysis of pre- and post-workshop scores of the treatment group showed a 63% increase in mean scores. The difference between the means was statistically significant. For the comparison group, there was a 3% increase in the number correct (an addition of one correct answer). This showed the value of attending a trauma-informed workshop for positively influencing knowledge of biopsychology that pertains to trauma and learning.

For the treatment group, the positive change in favorable attitudes could not be confirmed. After attending the trauma-informed workshop, there was a small increase in favorable attitudes. The increase was not found to be statistically significant. For the comparison group, one participant had not answered the item resulting in a response rate of 6. The comparison group data indicated an increase in favorable attitudes. The changes in the comparison group mean scores were not found to be statistically significant. A potential reason for the conflict between frequency data and statistical results may have been the small size of the post-workshop comparison group. According to Sullivan and Artino, a debate exists as to the effect of parametric tests based on sample size. Some experts assert that a sample size of 5 to 10 participants is adequate (Sullivan & Artino, 2013).

For the treatment group, negative beliefs about the importance of biopsychological knowledge for informing practice decreased from 33% to 9%. There was a five point increase in the category of strongly agree. The paired-samples *t*-test indicated that the positive change in

means was statistically significant. Therefore, the increase in knowledge was likely influenced by attending the trauma-informed workshop. For the comparison group, a review of the data found an increase in positive attitudes. The pre-workshop data showed four people initially in the disagreement categories, but in responses in the post-workshop survey, two of the four changed to the agreement categories. The statistical data indicated that the difference was not significant. As discussed in the section on attitude, the sample size may affect the results.

Factors Affecting Workshop Attendance

After attending the workshop, the faculty demonstrated an interest in learning more about trauma-informed classroom practices. The data indicated that the most significant factor inhibiting attendance at future trauma-informed workshops was time, followed by a merged category of time and money. In addition to responding to survey items, participants added additional comments in support of their responses. This was true not only of the attendance factors but was also true of recognizing the benefits of attending a trauma-informed workshop.

Summary

This data analysis chapter reported on the characteristics of the sample group populations. The treatment and comparison groups were similar in gender composition. In all other characteristics and in the group size, the two groups differed. The treatment group was two times greater in its number of participants. The treatment group equally represented faculty who were full- and part-time employed. The group taught more lower-level classes, had fewer years teaching experience and had faculty that spanned from teaching assistant to full professor. The treatment group had a high percentage of faculty representing the AHE discipline cluster.

Responses to the three main questions, and one supportive question indicated that faculty lack biopsychological knowledge even if their attitudes are favorable for its ability to provide

information about trauma-related behaviors in students or inform instructional practice.

Attending a trauma-informed workshop did increase biopsychological knowledge and mildly increased attitudes that were already favorable. Knowledge was also found to increase beliefs that biopsychology can inform instructional practices. The data also indicated that faculty believe that time is the greatest factor that can impede or inhibit attending trauma-informed programs.

CHAPTER V: DISCUSSION

Introduction

The current state of higher education requires changes in academic responsibilities. At the same time, faculty are seeking to meet the needs of a changing student population.

Awareness that a majority of students have experienced trauma strongly suggests a need for faculty to be knowledgeable about trauma-informed practices. Scientific knowledge has led to a deeper understanding of student behaviors and instructional practices.

This chapter discusses significant findings, limitations of this study, and implications as they relate to biopsychological knowledge in trauma-informed programs as a vital component in faculty development. A latent thread within the research process itself may be an indicator of the current responsibilities and constraints of the academic profession. Implications support additional research that may help in increasing university adoption of trauma-informed programs. The concluding section is a brief restatement of the research findings.

Interpretation of the Findings

The purpose of this non-experimental comparative study was threefold. The investigation began with gathering demographic information on the participants which allowed for comparison of group differences. The first question sought to establish a baseline understanding of faculty biopsychological knowledge as it pertains to trauma, to assess faculty attitudes that this knowledge is useful in understanding trauma-related student behaviors, and to assess faculty beliefs that biopsychological knowledge of trauma is informative for instructional practices. The second question sought to determine whether a trauma-informed workshop could increase faculty biopsychological knowledge of trauma, thereby favorably increasing attitudes and

positive beliefs. The third question sought to identify factors that could contribute to attendance in trauma-informed workshops.

Characteristics

For this study, the treatment group contained some faculty who taught lower-level courses than did the comparison group. The mean score representing the level taught for the treatment group was 1.24, $SD = 1.06$, and for the comparison group was $M = 2.14$, $SD = .76$. The treatment group's mean score reflected the high number of participants (23) who taught first-year courses. The treatment group also had a larger number of TAs and instructors (lower-ranking faculty) and had fewer years of teaching experience than did the comparison group. The mode of two years of teaching was the most frequently reported for the treatment group compared to the trimodal frequency of 10, 15, and 20 years of teaching reported by the comparison group. Fewer years of teaching and lower teaching ranks are typically associated with teaching lower-level courses.

A significant finding of the current study was the limited representation of faculty from some of the various disciplines. Low attendance is problematic since faculty are especially important to students who need the most support (Kezar & Maxey, 2014). Therefore, successful trauma-informed programs require participation of all faculty (Hoch et al., 2015). Fifteen percent of faculty participants represented the cluster of social and behavioral sciences. Six disciplines were clustered into the category of "other" representing the disciplines of business, physical sciences, mathematics, computer science, medical, health, and library sciences. The six disciplines represented 18% of the participants in the treatment group. The comparison group had five faculty representing the arts, humanities, and education cluster, five faculty from the social and behavioral sciences cluster, and four faculty in the "other" cluster.

Data for the current study indicated that 68% of faculty who attended the trauma-informed workshop were from the arts, humanities, and education (AHE) cluster. At least eight participants from the AHE cluster who participated in the third session of the workshop were TAs or writing instructors who were encouraged to attend the workshop by the director of the student writing lab. Attendance by writing instructors would be important since the attendees were likely to teach first-year students, and writing instructors who work within the humanities discipline frequently engage students in writing about trauma (Carello & Butler, 2014). As indicated by the title of their article, *Potentially Perilous Pedagogies: Teaching Trauma Is Not the Same as Trauma-Informed Teaching*, Carello and Butler are concerned about the immediate effects of instruction in the college classroom which aligns with the intervention of this study.

The characteristics of the participants that were gathered from the demographic survey items help depict the participants. The data discussed thus far have indicated the differences between the treatment and comparison groups. Further considerations of the impact of the characteristics are discussed in the section on limitations.

Questions

Question 1

Knowledge. The first research question sought to establish baseline knowledge of the biopsychology of trauma affecting learning. The question also posed the hypothesis that faculty do not have adequate knowledge in this area. This hypothesis was validated. The data collected from the pre-workshop survey indicated that more than half of the faculty were not able to correctly respond to over 50% of the knowledge items. However, some faculty did demonstrate knowledge of biopsychology to the extent that they were able to correctly answer most (8 or 9)

of the ten items. This was true for both the faculty who registered for the trauma workshop and for faculty who registered for the non-trauma workshop.

The survey knowledge items selected for each of the ten questions included distractor items chosen based on being common misperceptions that frequently appear in the media. The lack of knowledge could be attributed to the scarcity of trauma-informed biopsychological resources. Only 30% of the participants had previously attended workshops or read trauma-informed literature in the prior two years.

Lack of knowledge may reflect the relative recency of trauma-informed programs in higher education (Davidson & Northwest, 2017). The results of the survey responses may also indicate the previous cautionary usage associated with biopsychological programs and their implementation despite appeals for their integration into instructional practices (Hook & Farah, 2013; Varma et al., 2008; Zadina, 2015).

Attitude. It was hypothesized that faculty attitudes toward biopsychology in understanding student behaviors would be influenced by their level of knowledge. It was anticipated that lower performance on the survey knowledge items would generate less favorable attitudes than higher knowledge scores. Attitudes were assessed to determine the level of favorability toward biopsychology based on responses from the pre-workshop survey on the statement, “I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma.”

A majority (65%) of the faculty who registered to attend the trauma-informed workshop (the treatment group) were attitudinally favorable toward biopsychological knowledge as useful in understanding student behaviors. In contrast, less than half (43%) of the faculty who planned to attend a non-trauma-related workshop (the comparison group), maintained less favorable

attitudes. By percentage, the attitudes of the comparison group aligned with their level of knowledge as compared with the treatment group whose attitudes were more favorable than anticipated based on their low knowledge scores. Attitudes and beliefs may be more reflective of a self-selection bias than they are of knowledge. Self-selection bias was likely evidenced by the workshop choices of the participants. The *APA Dictionary of Psychology* (APA, 2019) defines self-selection bias as follows:

a type of bias that can arise when study participants choose their treatment conditions, rather than being randomly assigned. In such cases, it is impossible to state unambiguously that a study result is due to the treatment condition and not to the preexisting characteristics of those individuals who chose to be in this condition.

The treatment group self-selected attending a trauma-informed workshop, which may have reflected their more favorable attitudes or optimism that the workshop would be informative. The comparison group did not select the trauma-informed workshop, which likely influenced their attitudes about the benefit of attending the trauma-informed workshop as reflected in the group's overall response to the statement.

Beliefs about practice. It was hypothesized that faculty knowledge would be associated with biopsychological knowledge as this knowledge informs their teaching practices. Faculty beliefs were assessed to determine the level of positive beliefs toward biopsychological knowledge based on responses from the pre-workshop survey on the statement, "I believe that knowledge about biopsychology informs my teaching practices." It was anticipated that lower performance on the knowledge questions would be reflected in their beliefs. The data again suggested a self-selection bias effect. Results indicated that for the treatment group, a small majority of faculty (56%) held positive beliefs regarding the influence of biopsychological

knowledge on classroom practices. These beliefs, though still positive, were nine percentage points lower than attitudes about biopsychology on understanding student behaviors. The comparison group data indicated that half of the group was favorable in their beliefs about knowledge influencing practice, and half were neutral to negative. Faculty beliefs about practice were rated more favorably (50%) than the favorability responses on attitude (43%). It was concluded that, for the comparison group, beliefs about biopsychological knowledge informing practice were more in line with their level of knowledge than for the treatment group.

In summary, both groups demonstrated a lack of knowledge regarding the biopsychological effects of trauma on learning. This may be a reflection of non-attendance or engagement in reading trauma-informed materials. Based on their knowledge of biopsychology, the treatment group held more favorable attitudes and more positive beliefs than anticipated. It is suggested that this was in part due to self-selection bias. The data also indicated that the comparison group had a closer alignment of attitude and beliefs with their level of knowledge when compared with the treatment group.

Question 2

Three hypotheses were proposed to determine the effectiveness of a trauma-informed workshop. The hypotheses stated that attending a trauma-informed workshop (1) is effective in increasing biopsychological knowledge regarding trauma and its impact on learning, (2) will result in an increase in favorable attitudes that biopsychological knowledge is informative in understanding student behaviors, and (3) will increase beliefs that biopsychological knowledge can inform instructional practices.

The results substantiated the first hypothesis, indicating that attending a trauma-informed workshop is effective in increasing knowledge of the biopsychological foundations associated

with trauma. The data showed a 63% increase from the pre-workshop to the post-workshop mean scores on knowledge. The comparison group saw no increase in mean scores.

The second hypothesis of Question 2 was not substantiated. A visual analysis of the data indicated a three-point increase in favorable attitudes. However, the differences were not statistically confirmed. Several possible explanations for attitudes not increasing can be offered. First, the attitudes were already favorable for the treatment group. Compared with the increase in knowledge, it could be expected that the already favorable attitudes would not experience the same level of increase. Second, the small increase in favorable attitudes may be the result of a leveling out effect where the favorable attitudes became more in line with the knowledge score. A third explanation was the bidirectional pull of the scores on the Likert scale, where the category “strongly agree” increased, likely offsetting the increases in favorable attitudes. On the pre-workshop survey, three people (9%) strongly disagreed, and three people (9%) disagreed with the statement that biopsychological knowledge increases understanding of student behaviors. After completing the workshop, four participants (12%) strongly disagreed, and two participants (6%) disagreed.

The third hypothesis in Question 2 was substantiated. It was anticipated that the trauma-informed workshop would positively increase beliefs that biopsychological knowledge can inform instructional practices. Two doctoral dissertations on trauma-informed workshops (Doughty, 2018; Wilson, 2013) found favorable results regarding the benefits of trauma-informed knowledge in a classroom setting. Typically, trauma-informed programs present biopsychological information (Hoch et al., 2015). These research investigations differed from the current study, which specifically focused on biopsychological knowledge to discover whether

scientific knowledge is effective in increasing knowledge, improving attitudes, and improving classroom practices.

Recent trauma-informed studies support similar outcomes of the current study. Wilson (2013) found confirmation bias (self-selecting bias) in a trauma-informed program study at the PreK–12 grade levels. Wilson concluded that teachers demonstrated positive attitudes about the program before the program’s implementation. According to Wilson, there was no increase in attitudinal scores because of the initially high perceptions of the effectiveness of the program. This current study found similar results suggesting a self-selection bias of faculty who had registered to attend a trauma-informed workshop. The majority of the group entered the study with favorable attitudes toward the effectiveness of biopsychological knowledge as useful in understanding trauma-related student behaviors and, to a smaller extent, but still a majority, for informing classroom practice.

The positive attitudes and beliefs about the benefits of biopsychological knowledge in this study’s participants did increase after attending the workshop, even though they were initially more positive. Increases in favorable attitudes have been found in other programs that provided biopsychological or trauma-informed content. In an investigation of “Learning and the Brain” programs, Hook and Farah (2013) stated that attending these conferences improved teachers’ understanding of student behaviors at multiple grade levels. Doughty (2018) found that a trauma-informed workshop conducted at a community college was effective in increasing favorable attitudes, and the research of Klinek (2009) indicated an increase in favorable attitudes of faculty who engaged in a brain-based instructional program.

Question 3

The third part of this study sought to understand factors that would impede or increase participation in faculty development programs on the biopsychology of trauma on learning. Based on the research indicating overall high demands on faculty, it was hypothesized that interfering factors exist. The results of this study suggested that the element of time was the most significant concern in attending workshops. This finding is supported by research showing that faculty are spending less time on instruction-related activities (Finkelstein et al., 2016), and that overly demanding schedules limit time to think about improving teaching (Kezar, 2015, p. 17). Data analysis in this current study also found that monetary constraints are factors that could affect attending faculty development workshops. Such findings support research indicating that budgetary fiscal restraints (Austin & Sorcinelli, 2013) and institutional reliance on unreliable grant funding affect faculty development programs (Kezar, 2015).

Limitations of the Study

The limitations of this study may provide insights that can better facilitate the implementation of biopsychological research and trauma-informed programs. A significant limitation of the study was the recruitment and retention of faculty participants. As discussed in *Response Rates Matter - Just Not as Much as We Think*, a blog article of the Collaborative on Academic Careers in Higher Education (COACHE), a high response rate does not necessarily provide the most accurate picture. What is desired is true representativeness in the survey results (Benson, 2018).

For this study and this institution, a limitation may have existed in the chosen research design. A qualitative study or a mixed methods study may have been better suited, based on the

low response rate. A qualitative study would not require the power and effect size associated with quantitative investigations.

The low numbers of participants exacerbated any apparent differences in characteristics between the treatment and comparison groups. The difference between the variances of the two groups was confirmed by conducting Levene's test for equality of variances. For example, the treatment group had faculty representing all six ranks. The comparison group had thirteen (all but one of the fourteen) faculty members representing the upper professorial ranks of full, associate, and assistant professor.

In preparation for this research, the sample size was estimated based on the recruitment of 10% of a specified faculty population. Statistical calculations were computed for power and effect size. Participants were recruited over a four-month period toward achieving an adequate sample size. The recruitment campaign resulted in an aggregated participant total of 48 respondents. This included 34 treatment group participants. The response rate of the treatment group on the pre and post-workshop survey was 100%. Fourteen (14) participants were recruited for the comparison group. All 14 faculty who were recruited participated in the pre-workshop survey and seven completed the post-workshop survey. For this study, power and effect size targets were not achieved perhaps as a result of the actual representativeness of the state of faculty affairs; however, the lower response rate may reflect limited time for professional development (Kezar, 2015, p. 17).

Recruitment procedures can result in self-selection bias and a non-response rate (Patel, Doku, & Tennakoon, 2003, p. 229). Self-selection bias may be associated with the attitudes and beliefs of the participants. Recruitment procedures, especially for the comparison group, may have affected the drop-out rate on the post-workshop survey. According to Patel et al., retention

of participants can increase due to the researcher's presence and building relationships with the participants to encourage continuation in the research. This study was limited in this respect as the researcher was unable to attend the comparison group workshops. However, the researcher did recognize and appreciate the efforts of the director of the CFD.

A concern arose regarding the recruitment of workshop participants for the treatment group. It is assumed that, by the act of registering for the workshop, the treatment group represented faculty who self-selected attending the workshop on trauma. However, there was evidence that the TAs were "encouraged" to attend the workshop. There is a danger that a sense of obligation may interfere with and affect attitudes or attention to workshop content. This can be considered a form of response bias. Traditionally, response bias is the shaping of a participant's responses to please the interviewer. In the current situation, it could be assumed that the response given by a participant who was "encouraged" to attend by an authoritative figure could be viewed as coercion. Coerced responses may result in an inaccurate set of conclusions.

The response rate from both the treatment and comparison groups through January 2019 was lower than anticipated. The treatment group completed 25 pre- and post-workshop surveys. The comparison group completed 14 pre-workshop surveys and seven post-workshop surveys. In consultation with the director of the CFD, it was decided to accept a sample size of 30 for the treatment group and accept the smaller sample size of the comparison group. Final recruitment for one more trauma-informed workshop was advertised. A curriculum and instruction class comprised of nine faculty members expressed interest in the trauma-informed workshop, and the final workshop was conducted on February 27, 2019.

A sample size of approximately 30 is often arbitrarily considered an adequate sample size (Berkowitz & Lynch, 2015; Kar & Ramalingam, 2013). In some textbooks, it is considered a

“large enough” sample size (Berkowitz & Lynch, 2015). A smaller sample size decreases the power and increases the chance of assuming a Type II error where a false finding is assumed to be true (Deziel, 2018), which may result in failing to detect what was intended (Kar & Ramalingam, 2013). Without a statistically adequate sample size, the results should be interpreted with caution. This was likely the case with the negative responses of the treatment group to attitudes that biopsychology could increase understanding of trauma-related behaviors in students. Since attending a workshop was a choice, it would be expected that attitudes would be generally more favorable. The small sample size likely gave more weight to the negative response choices of “strongly disagree” and “disagree.” The change in positive frequency was found not to be statistically significant even though the data pointed to favorable increases in attitudes.

The demographic data reported in Chapter 2 depicted the treatment group as a more characteristically diversified group than the comparison group. The comparison group included faculty who had a greater number of years teaching, contained more full-time, higher-ranked faculty, and taught higher-level students. A larger number of participants in the comparison group may have equalized these characteristics within the comparison group and across the two groups.

The diverse group populations of the treatment and comparison groups did not provide an accurate representation of or comparison with the larger faculty population as a whole. Research indicates that typically, faculty from a narrow group of disciplines participate in trauma-informed programs (Felter & Ayers, 2016). Where the treatment group differed from the larger population was that it consisted of a small number of disciplines within the college, with a substantial number of faculty representing the arts, humanities, and education faculty.

A caveat related to the population size and this specific research is that any interpretation and application of results to other higher education faculty professional development or other higher education institutions professional development policies should be done so with caution. Institutions are unique as organizations with often loosely coupled institutional policies (Bess & Dee, 2012). These differences are demonstrated by this institution's policy, where faculty had professional development choices. In contrast, trauma-informed workshops strongly support institution-wide participation by all staff and students.

Another concern that could be considered a limitation of the study is the distribution of the study to participants in paper and pencil format, primarily to the treatment group. As previously noted, one treatment group participant's request to take the survey online was honored. The comparison group was administered the surveys online. Evidence exists that online versus paper-pencil formats do not affect the outcome of the research (Davidov & Depner, 2011). Rüksamen, Akmatov, Castell, and Karch (2017) concluded that the mixed-mode collection of data did not cause a strong distortion of their results.

The research plan initially included the administration of a follow-up post-trauma-informed workshop survey. Due to a lack of response from participants, a follow-up could not be conducted. Since no follow-up was conducted, the degree of fade-out could not be determined. Brain research indicated that knowledge gained in an intervention is not likely to be sustained in an isolated environment (Protzko, 2015). Faculty development research has suggested several options for maintaining and improving practice in the classroom. Reflective practice, teaming with faculty peers, and seeking student feedback (Condon & Iverson, 2016) are examples of extended practices that could be applied based on information presented in the trauma-informed workshop. The lack of knowledge revealed by scientific findings would likely lend support to

continued trauma-informed interventions or environments where faculty work closely together to maintain the knowledge gained from the intervention.

The limitations of this study can largely be attributed to the recruitment process resulting in a less than ideal sample size and unequal group sizes. The recruitment and sample sizes likely contributed to differences in the characteristics between the two groups. In an attempt to acquire the proposed sample size, the recruitment and the interventions were spread out over an extended time period. This resulted in the planned follow-up being abandoned. Overall, the findings are not assumed to be representative of the host university faculty nor the faculty population as a whole. They do, however, provide insight for practice and further research.

Implications for Practice

The results of this study indicate that faculty have limited knowledge about the biopsychological effects of trauma. Closely related to this finding, with implication for instruction, is that trauma-related biopsychological behavior is not clearly understood (Porges & Dykema, 2006), and misconceptions exist (Sniatecki, Perry, & Snell, 2015). While general knowledge is growing regarding the impact of trauma on learning at the higher education level (Davidson & Northwest, 2017), the lack of research on trauma-informed programs in higher education (Doughty, 2019) provides evidence that teaching faculty are not benefiting from this information. Research offers confirmation that scientific knowledge is impactful in understanding learning and emotions (Tyng et al., 2017) and student behaviors (Hook & Farah, 2013; Klinek, 2009). Therefore, an emphasis on scientific understanding regarding trauma may likely better inform faculty.

The findings of this study indicate that a trauma-informed program that provides biopsychological information can increase knowledge and can influence the belief that scientific

knowledge can inform classroom practice. A positive outcome is that faculty, prior to attending the trauma workshop, had demonstrated favorable attitudes that biopsychological knowledge could inform understanding about student behaviors. The importance of this research is summed up by a statement by one participant: “This information is vital to the health of universities moving forward. I would love to see a broader program to get this information to faculty and administrators.”

Implications for Further Research and Policy

Based on the events and outcomes, several suggestions are offered. This study was an initial inquiry focused on the understanding of the biopsychological effects of trauma for educational purposes. The survey instrument was developed by the researcher based on literature and the workshop PowerPoint presentation. Survey items were constructed based on the researcher’s academic knowledge of survey development and a review of items by content experts. The researcher did review surveys such as the ACEs Questionnaire (Murphy et al., 2016) and the ARTIC scale (Baker et al., 2016). In hindsight, the research also found that the concept of trauma and biopsychological effects of trauma became blurred. This was the case with the question, “In the past two years, have you attended a workshop or read literature on trauma?”

The research results suggest refinements that could be obtained through a mixed-method, longitudinal research design. The use of qualitative and mixed methods research in faculty development programs have been found to be effective in capturing the complexity of workshop interventions (Steinert et al., 2006). This could also be true for understanding the reasons for changes in faculty attitudes and beliefs. Hook and Farah (2012) provided insight into their qualitative study where they interviewed Pre-K–12 grade teachers who had attended several

“Learning and the Brain Conferences.” Teachers stated that neuroscience enabled them to maintain informed perspective when working with difficult students. Neuroscience changed the teachers’ misperceptions about students who were not doing well and no longer made statements such as “Oh, they’re not trying hard enough.” Also, the teachers commented that they were better able to assess the appropriateness of the curriculum.

Another area of improvement is in the recruitment of an adequate sample size. For example, the 2018–2019 data provided by the host institution’s CFD calculated attendance at faculty development programs to be approximately 25% of the faculty population. This estimate is based on 244 faculty out of approximately 1,000 full- and part-time faculty attending one faculty development session per year offered by the CFD. If trauma-informed programs seek to involve the entire institutional community, including all levels of administration, faculty, students, and general staff, a more extensive planning process is required.

This research indicated positive findings regarding the biopsychological knowledge of trauma. These results can be used in the development of policy for influencing both the institutional system and classroom functions (Brint & Clotfelter, 2016). Policy is critical for the adoption of new programs (Baker et al., 2010) and in sustaining programs (Kezar, 2015). On a broader scale, research can be shared through scholarly literature for the advancement of instructional practices with the caveat that the demographic differences between the treatment and comparison groups in this study might not reflect faculty demographics nationally.

Conclusion

The participant sample, though it cannot be assumed to represent all the faculty, provided evidence that faculty have limited knowledge of the biopsychological foundations of trauma. This is supported by the finding that only 27% of all faculty surveyed had attended a workshop

or read literature on trauma in the past two years. Faculty tend to be positive in their views that biopsychological knowledge is beneficial and attending a trauma-informed workshop can improve knowledge and strengthen attitudes and beliefs. Faculty also believe that certain factors, primarily scheduling demands, interfere with learning more about the biopsychological effects of trauma and their impact on learning and instruction.

Higher education is faced with new challenges, such as a demographically changing and growing student population (Finkelstein, et., al., 2016) and an increased responsibility to help students complete their education (Kuh, 2016). Research has indicated that these student populations have an increased likelihood of past traumatic experiences (Dutro & Bien, 2014; Porche et al., 2016). Therefore, faculty who are considered to be the face of the institution for many students (Walkley & Cox, 2013) and who are recognized as key in promoting student success especially among students who need the most support (Kezar & Maxey, 2014, p. 30) must become more informed about trauma as it relates to student behaviors and learning.

Faculty development is an effective professional practice (Condon et al., 2016) and is critical for supporting ensuring institutional quality (Beach, Sorcinelli, Austin, & Rivard, 2016). However, only recently have trauma-informed programs been introduced to faculty at the higher education level (Davidson & Northwest, 2017; Doughty, 2018). To date, little research has been conducted regarding the effectiveness of these programs (Doughty, 2018). Trauma-informed programs provide both general information and biopsychological material (Davidson & Northwest, 2017; Hoch et al., 2015). General studies of biopsychological material and brain-based curricula have been found useful in understanding learning and emotions (Tyng et al., 2017) and student behaviors (Hook & Farah, 2009; Klinek, 2013).

Faculty have limited discretionary time. This affects attendance in professional development programs (Kezar, 2015). It is necessary then to determine the components of workshops that will maximize faculty time while increasing knowledge in areas of trauma-related behaviors and instructional practices. This research was a first step in clarifying the importance of biopsychological knowledge in trauma-informed programs.

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APPENDICES

Appendix A
Study on Trauma Survey
(1 of 9)

Introduction

The following items are intended to measure the extent of faculty knowledge, attitudes, and practices about the biopsychology of trauma on learning.

Definition:

Biopsychology is defined as the study of how brain structures, neurochemicals, and other aspects of biology influence behaviors, thoughts, and feelings.

On taking this survey...

It is important to have an accurate picture of faculty knowledge, attitudes, and practices. For the following knowledge items, if you don't know or are unsure of your response, please mark "I don't know". "I don't know" is always the last listed response choice.

- Q1 Part 1: Knowledge Items (10 items)
According to the National Center for Mental Health Promotion and Youth Violence Prevention (2012) and the Adverse Childhood Experience Study (ACEs), the percentage of people having experienced trauma is...
- 25% to 55%
- 66% to 85%
- 86% to 95%
- I don't know
- Q2 The trauma-related behavior of dissociation can be demonstrated by...
- Day dreaming
- Intentional disregard of the teacher
- Intentionally not blaming the abuser
- I don't know

Appendix A
Study on Trauma Survey
(2 of 9)

■ Q3 The ability to overcome stressful events is called _____.



- Neuroplasticity
- Mindfulness
- Resiliency
- I don't know

■ Q4 Victims are often not aware of the impact that trauma has caused on their behavior. This is called _____.



- Amnesia
- Intentional discounting of an event
- Emotional numbing
- I don't know

■ Q5 Traumatic behaviors are considered to be...



- Maladaptive
- Survival skills
- Anxiety causing behaviors
- I don't know

Appendix A

Study on Trauma Survey (3 of 9)

■ Q6 Under threat the emotional brain "grabs control " of the sympathetic nervous system causing the person to respond with reactions commonly associated with trauma.
⚙ These reactions are the _____, _____ mobilization system or the _____ immobilize system.

- Hallucinating, Hypervigilant, Homeostatic
- Preparatory, Propelling, Placid
- Fight, Flight, Freeze
- I don't know

■ Q7 Under threat the prefrontal cortex becomes _____ resulting in either immobilization or mobilization and the inability to make decisions.



- Active
- Inactive
- Overstimulated by thoughts
- I don't know

■ Q8 A physiological effect of trauma keeps the body in a state of _____.



- Hypervigilance
- Shock
- Depression
- I don't know

■ Q9 A person experiencing trauma can underreact due to _____, the body's natural pain killer.



- Cortisol
- Opioids
- Dopamine
- I don't know

Appendix A
Study on Trauma Survey
(4 of 9)

■ Q10 The release of the natural chemical _____ may result in the victim smiling, giggling, laughing and maybe even talking about the offender in loving terms.



- Cortisol
- Oxytocin
- Alpha-amylase
- I don't know

■ Q11

Part 2: Attitude Items (1 Item)



(Definition of biopsychology: How brain structures, neurochemicals, and other aspects of our biology influence behaviors, thoughts, and feelings.)

I believe that knowledge about biopsychology informs my attitudes toward students who have experienced trauma.

- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

■

Q12

Part 3: Instructional Practice Items (1 item)

I believe that knowledge about biopsychology (as defined in the previous question) informs my teaching practices.



- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Appendix A
Study on Trauma Survey
(5 of 9)



New Question...

Q13



After attending this workshop I believe my knowledge about working with students with trauma has increased.

- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree



New Question...

Q14



After attending this workshop I am interested in learning more about trauma-informed classroom practices.

- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree



New Question...

Q15



After attending this workshop I believe that knowledge about biopsychology has increased my understanding of student behaviors.

- Strongly Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Appendix A
Study on Trauma Survey
(6 of 9)

■
Q16



Part 4: Organizational factors that may affect the implementation of trauma-informed practices.

What factors do you feel may facilitate engagement in further exploration on the biopsychology of learning and trauma? (Check all that apply)

- Time compensation
- Monetary compensation
- Other (Please specify): _____

■
Q17



What organizational factors do you feel may interfere with further exploration (e.g. attending workshops) on the biopsychology of learning and trauma? (Check all that apply)

- Time compensation
- Monetary compensation
- Other (Please specify): _____

■
Q18



Please indicate the order of importance of your job responsibilities based on the priorities of your institution. (1 is highest importance)

- | | 1 | 2 | 3 | 4 |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Teaching | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Research / Scholarly writing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Service to the department | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (Please specify): _____ <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

■
Q19



Please indicate the order of importance of your job responsibilities based on your personal priorities. (1 is highest importance)

- | | 1 | 2 | 3 | 4 |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Teaching | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Research / Scholarly writing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Service to the department | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (Please specify): _____ <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Appendix A
Study on Trauma Survey
(7 of 9)

■ Part 5: Demographic Information Items (9 items, variable response choices) -----

Q20



What is your rank?

- Full Professor
- Associate Professor
- Assistant Professor
- Instructor
- Lecturer

■ What is your employment status?

Q21



- Full-time
- Part-time
- Other. Please specify

■ How many years have you taught in higher education?

Q22



- Number of years

■ 4. Please indicate the academic levels you have taught in the last two academic years, not including this year. (Check all that apply)

Q23



- Remedial Education -----
- 1st year -----
- 2nd year -----
- 3rd year -----
- e. 4th year -----
- f. Certificate -----
- g. Graduate -----

Appendix A
Study on Trauma Survey
(8 of 9)

Q24 Please indicate whether you as a faculty member have had a student confide in you that they have experienced trauma.



- Yes
 No
 Unsure

Q25 Have you or someone close to you ever experienced a traumatic event?



- Yes
 No
 Unsure

Q26 In the past two years, not including this year, have you attended a workshop or have read literature on trauma?




- Yes
 No
 Unsure

Appendix A
Study on Trauma Survey
(9 of 9)

Q27

Your primary discipline is...

 Arts and Humanities

Social and Behavioral Sciences

Business Administration or Economics

Law

Life Sciences

Chemistry

Physical Sciences, Mathematics, Computer Sciences

Engineering, Manufacturing and Construction, Architecture

Agriculture


Medical Sciences, Health Sciences, Social Services

Personal Services, Transport Services, Security Services

Other: Please specify (e.g., interdisciplinary)

Q28

Your gender is...

 Male

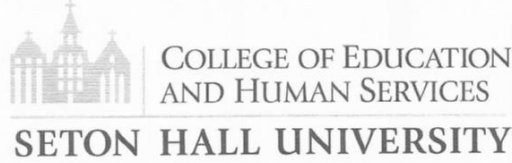
Female

Other

End of Survey

Appendix B

Invitation to a Trauma-Informed Workshop – Treatment Group



10/9/2018

Invitation to Faculty

You are invited to attend a colloquium on *Trauma-Informed Care on a College Campus* sponsored by the College of Education and Human Services and the SHU Center for Faculty Development. Our featured speaker is Dr. Amy Hoch, Associate Director of Counseling and Psychological Services at Rowan University and Past Chairperson of the American College Health Association's (ACHA) Safety and Violence Coalition. Dr. Hoch is recognized as an expert on trauma and addressing the needs of students inside the classroom and campus-wide.

Faculty who wish to gain a better understanding of how early-life trauma impacts student behavior and performance in the classroom are highly encouraged to attend.

The program is free. Light refreshments will be provided. **Reservations are required and can be made by contacting ann.rodrigues@shu.edu.**

To accommodate faculty teaching schedules the **workshop will be offered twice**. When you respond please indicate which date you will attend.

Join us on the Seton Hall University Campus, South Orange, New Jersey.

Tuesday, October 23, 2018 from 3 p.m. to 6 p.m. - Corrigan Hall 3 (79)

Wednesday, October 24, 2018 from 10 a.m. to 1 p.m. - Beck AB

Sincerely,

Martin Finkelstein, Ph.D.
Professor of Higher Education

Mary Balkun
Director of the SHU Center of Faculty Development

Appendix C

Consent Statement – Treatment Group

(1 of 4)

Seton Hall University
Institutional Review Board

OCT 08 2018

Approval Date



COLLEGE OF EDUCATION
AND HUMAN SERVICES

SETON HALL UNIVERSITY

Expiration Date

OCT 08 2019

Consent to Participate in a Trauma-Informed Research Study (For the Trauma Workshop Participants)

Dear Workshop Registrant:

Faculty are invited to participate in the **Trauma-Informed Research Study**. Please read this consent form which provides detailed information regarding participation in the study. If you agree to participate, please sign at the bottom. You are being given two copies of the consent form, one for the research records, the second one is for the participant to keep.

1. Researcher's affiliation

This study is being conducted by Joan Buzick, a Ph.D. Candidate in the Education, Leadership, Management and Policy (ELMP), Higher Education Program in the Research, Assessment and Program Evaluation Track at Seton Hall University.

2. The purpose and duration of the study

The purpose of this study is to...

- Investigate faculty knowledge, attitudes and practices about trauma
- To explore the extent professional development can have on the knowledge, attitudes and instructional behavior of college faculty
- To investigate organizational and individual factors such as work priorities, time compensation, that may impede or support faculty attending a trauma-informed workshop.

Faculty who are participating in the "Trauma-Informed Care on College Campuses" workshop are asked to complete the "Study on Trauma" survey prior to and immediately after the workshop. The estimated time for completing the survey is...

- 15 minutes the pre-workshop survey
- 15 minutes for the post-workshop
- 15 minutes for an online survey one month after the workshop.

3. The Procedures...

- Attendees will receive a paper copy of both the "Pre-Workshop" Survey and the "Post-Workshop" Survey upon signing and submitting this consent form.
- Completed Pre-Workshop Surveys will be gathered at the start of the workshop.
- At the conclusion of the workshop participants will be asked to complete the Post-Workshop Survey.
- The survey will be collected by the researcher as the participants are exiting the workshop.

4. The Survey Instrument

About the "Study on Trauma" Survey...

- The "Study on Trauma" Survey is divided into five (5) sections. A sixth section is only for those who have attended the workshop "Trauma-Informed Care on College Campuses".
- Sections 1,2,3 seeks responses on knowledge, attitudes and practices about trauma.

Sample question:

Page 1 | 4

Department of Education Leadership, Management and Policy
Jubilee Hall • 400 South Orange Avenue • South Orange, NJ 07079 • Tel: 973.761.9397 • Fax: 973.275.2847 • www.shu.edu

Appendix C

Consent Form – Treatment Group

(2 of 4)

Seton Hall University Institutional Review Board OCT 08 2018 Approval Date	Expiration Date OCT 08 2019
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According to the National Center for Mental Health Promotion and Youth Violence Prevention (2012) and the Adverse Childhood Experience Study (ACEs), the percentage of people having experienced trauma is...

a. 25% to 55% b. 66% to 85% c. 86% to 95% d. I don't know

- Section 4 seeks responses on organizational and individual factors that may impede or support faculty attending a trauma-informed workshop.
Sample question:
What factors do you feel may facilitate engagement in further exploration on the biopsychology of learning and trauma? (Check all that apply)
a. Time compensation b. compensation c. Other (Please specify): _____
- Section 5 seeks demographic information (Faculty rank, full or part-time employment)
- Section 6 -Seeks to understand workshop effectiveness
Sample: I am interested in more information on trauma-informed classroom practices.
a. Yes b. No c. Unsure
Sample:
Based on the information presented I am interested in more information on Trauma-Informed classroom practices.
a. Yes b. No c. Unsure

5. Voluntary Nature of Participation
Participating in this research study by taking the "Study on Trauma" survey is voluntary. Refusal to participate or discontinuing participation at any time will involve no penalty or loss of benefits to which the subject is otherwise entitled.

6. Anonymity
Because surveys will be completed on site, anonymity cannot be guaranteed.

7. Statement of Confidentiality:

- Pre, Post and the follow-up surveys will be number coded and distributed to the participants and linked by the researcher to respondent emails. Only the researcher will have access to the linked codes. Once the responses are recorded or transposed into data, all documents with code assignments linked to email addresses will be destroyed.
- All data will be securely stored to maintain protecting the subjects' identities. For security reasons, data will not be stored electronically on hard drives of laptop or desktop computers. Data will be stored electronically on a USB memory key and kept in a locked location in the office of the researcher.

8. Records
Only the researcher and the mentor of researcher (as needed/required) will have access to records.

9. Risks or Discomforts
As reported by the American Psychological Association (APA) in "Trauma Research and the Institutional Review Board Executive Committee, Division 56", (Dalenberg, 2013) research indicates that questions regarding child abuse or trauma are not significantly distressing to research study participants (Carlson, Newman, Daniels, Armstrong, Roth, & Loewenstein, 2003; Cromer, Freyd,

Page 2 | 4

Appendix C
Consent Form – Treatment Group

(3 of 4)

Seton Hall University
Institutional Review Board
OCT 08 2018

Expiration Date
OCT 08 2019

Approval Date

Binder, DePrince, & Becker-Blease, 2006; Kassam-Adams & Newman, 2002; Newman, Walker, & Gefland, 1999; Walker, Newman, Koss, & Bernstein, 1997).

This investigation does not ask participants to discuss personal traumas. One general question about personal trauma is asked in the survey, "I have experienced trauma, or I know someone close to me who has experienced trauma." with the response choices of "Yes, No, Unsure." Because of the minimal risk of this study, the researcher does not foresee emergencies and will not follow-up in this regard for such purposes. While the majority of participants are expected to have neutral or positive experiences participating in this study, the researcher is aware that there is a limited risk someone may respond negatively about traumatic events. If such feelings do occur, participants may discontinue participation at any time and should seek help.

10. Direct benefits

This research has potential benefits for faculty and students as results may be used to inform instructional practice. An additional benefit is to inform policy as better facilitate faculty development in the area of trauma.

11. Statement on Remuneration

No remuneration is offered for participation in this research survey.

12. Statement of Compensation

This research is considered to be minimal risk to the participant. Therefore no compensation is required or will be offered.

13. Alternative Procedures or Courses

More information on trauma-informed practices in post-secondary education and developing trauma informed organizations can be found at the following websites:

- Trauma-Informed Practices for Postsecondary Education," a new guide from Education Northwest and the Oregon Community College
<https://educationnorthwest.org/sites/default/files/resources/trauma-informed-practices-postsecondary-508.pdf>.
- Developing Trauma-Informed Organizations <https://www.ncbi.nlm.nih.gov/books/NBK207204/>

14. Contact Information:

The principal researcher:
Joan Buzick, Ph.D. Candidate
Jubilee Hall
(973)761-9397

Faculty advisor:
Martin Finkelstein, Ph.D.
Higher Education
Jubilee Hall
(973)761-9397

Continued...

Page 3 | 4

Appendix C
Consent Form – Treatment Group
(4 of 4)

For answers to pertinent questions about the research and research subject's rights Contact:
Mary F. Ruzicka, Ph.D.
IRB Director
Seton Hall University
(973) 313-6314

15. No video or audio-tapes are involved in this research.

16. **Consent form**

Participants retain one copy of the signed and dated consent form for their records.

I have read the above description explaining the research study and my rights as a participant.
My signature indicates my willingness to participate and authorizes the researcher to use my responses
for the study.

Signature of Participant

Date

Seton Hall University
Institutional Review Board

OCT 08 2018

Approval Date

Expiration Date

OCT 08 2018

Page 4 | 4

As new IRB regulations came into effect (July 19, 2018) prior to the survey's distribution written consent to complete the survey was no longer required.

Appendix D
Faculty Development Workshops
(1 of 3)

**THE CENTER FOR FACULTY DEVELOPMENT
FALL 2018 SCHEDULE**

The Center for Faculty Development will again be sponsoring a wide array of programs to support faculty teaching, scholarship, and work life, starting with the Fall 2018 semester. For the current listing, please see the attached document. It includes dates for the Fall Faculty Lunches, as well as dates for the Winter and Summer Writing retreats.

This year, we will be recognizing those who attend any three CFD workshops during the year (8/15/18 - 6/30/19) with a certificate and a letter to the faculty member's dean and department chair attesting to their involvement. Those who receive a certificate will also be entered into a lottery for a prize. To be eligible, be sure to sign in at each CFD-sponsored event you attend.

WORKSHOPS AND SPECIAL EVENTS

All workshops are free of charge, although registration is recommended.

AUGUST

AUG 21, 9:00 – 7:00, Beck Rooms; Atrium
New Faculty Orientation

SEPTEMBER

SEPT 6, 9:00 – 11:00, Faculty Lounge
Adjunct Open House

SEPT 14, 11:00 – 12:00, Learning Space, Walsh Library
Uploading Your Tenure and Promotion Materials into Blackboard

SEPT 19, 1:00 - 2:30, Faculty Lounge
Institutional Review Board Presentation

SEPT 25, 9:30 - 10:30, Faculty Lounge
Preventing Plagiarism in Student Writing

OCTOBER

OCT 3, 11:00 – 12:00, Jubilee Hall 132
The Advisor in All of Us

Appendix D

Faculty Development Workshops

(2 of 3)

OCT 11, 9:30 - 10:30, Location TBA
Ally: A New Tool for Course Accessibility

OCT 16, 11:00 – 12:00, Faculty Lounge
One Small Change: Using ~~Flickers~~ for Just-in-Time Feedback

OCT 22 9:30 – 11:00, Faculty Lounge
OCT 23, 9:30 - 11:00, Faculty Lounge (repeat session)
Lessons from the Best Teachers Summer Institute &
Lessons from the National Survey of Student Engagement (NSSE)

NOVEMBER

NOV 2, 10:00 - 11:30, Faculty Lounge
Gender Identity in the Classroom: Challenges and Strategies

NOV 13, 4:00 – 6:00, Beck Rooms
Reception for First- and Second- Year Faculty

NOV 15, 12:30 – 1:30, Faculty Lounge
New and Little Known Library Resources for Teaching and Scholarship

NOV 28, 12:30 - 1:30, Chancellor's Suite
Meditation Workshop

DECEMBER

DEC 4, 3:30 – 4:30, Faculty Lounge
Lessons from the University Teaching Fellows

DEC 7, 9:30 - 11:00, Stafford Hall 110
What the Best Teachers Do: A Student Perspective

DEC 11, 12:00 – 1:00, Faculty Lounge
Project Syllabus: SHU Edition

LOOKING AHEAD

JANUARY

JAN 7 and 8, 10:00 – 3:00, Chancellor's Suite
Winter Writing Retreat (look for the CFP in November)

MAY

Appendix D

Faculty Development Workshops

(3 of 3)

FACULTY LUNCHES

Details can be found at: <http://www.shu.edu/news/fall - 2018 - faculty - lunches.cfm>

FALL 2018

T Aug. 28
W Sept 5
T Sept. 11
R Sept 20
W Sept. 26
T Oct 2
W Oct 10
W Oct 17
T Oct 23
W Oct 31
T Nov 6
W Nov 14
T Nov 20
W Nov 28
T Dec. 4

WRITE CLUB

TWR 3:30 - 6:30
F 9:30 - 12:30
Starting Aug. 28
Duffy Hall, rm. 83
|

Check the CFD website for full details and updates:
<http://www.shu.edu/faculty - development/index.cfm>

Check your email for weekly announcements from the Office of the Provost, which will contain full session descriptions.

Receive emails and updates by subscribing to our blog at:
<http://blogs.shu.edu/centerforfacultydevelopment/follow - us/>

For additional information or to suggest CFD workshops, events, or speakers, contact Mary Balkun, Professor of English and Director of Faculty Development at: mary.balkun@shu.edu

Appendix E

Invitation from the Director of the Center for Faculty Development

Dr. Balkun letter to the non-trauma workshop participants inviting them to participate in the pre/post survey

From: Mary M Balkun
Sent: Friday, October 19, 2018 2:49 PM
Subject: Survey Request
Importance: High

Dear Colleague,

I'm reaching out to you as a registrant for one of next week's Best Teachers workshops. The Center for Faculty Development is assisting a graduate student in CEHS who is gathering data for a study she is undertaking. (You may have seen an announcement about two trauma workshops being offered in the next few weeks, which are also part of her work.) We are hoping you might be willing to help out by taking an online pre- and post-workshop "Study on Trauma Survey" (approximately 7 minutes per survey). The goal of the survey is to investigate faculty knowledge, attitudes, instructional practices, and organizational support as they relate to trauma issues in the classroom in a group not taking a trauma workshop.

If you are willing to participate, please let me know. I will then ask the student, Joan Buzick (who is working with Marty Finkelstein), to send you the link to the pre-survey. Many of us have been in this position as graduate students, and I know Joan will very much appreciate your willingness to pay it forward.

Regards,

Mary

Appendix E

IRB Approval for Research



October 8, 2018



Dear Ms. Buzick,

The Seton Hall University Institutional Review Board has reviewed the information you have submitted addressing the concerns for your proposal entitled "The Biopsychology of Trauma on Learning: An Investigation of Interventions for Faculty". Your research protocol is hereby approved as completed through expedited review. The IRB reserves the right to recall the proposal at any time for full review.

Enclosed for your records are the signed Request for Approval form and the stamped original Consent Form. Make a copy only of this stamped form.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol must be reviewed and approved by the IRB prior to their implementation.

According to federal regulations, continuing review of already approved research is mandated to take place at least 12 months after this initial approval. You will receive communication from the IRB Office for this several months before the anniversary date of your initial approval.

Thank you for your cooperation.

In harmony with federal regulations, none of the investigators or research staff involved in the study took part in the final decision.

Sincerely,

Mary F. Ruzicka, Ph.D.
Professor
Director, Institutional Review Board

cc: Dr. Martin Finkelstein

Office of Institutional Review Board
Presidents Hall • 400 South Orange Avenue • South Orange, NJ 07079 • Tel: 973.313.6314 • Fax: 973.275.2361 • www.shu.edu

A HOME FOR THE MIND, THE HEART AND THE SPIRIT

Appendix G

Protecting Human Research Participant Certificate

