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Effect of Self-Regulation on Academic Success Among College Students with Traumatic Life Events

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Abstract: Most college students have experienced at least one traumatic event in their lives. However, not all students are affected equally by trauma—some persevere, whereas others do not. While many studies have assessed the physical and mental effects of traumatic life events on college students, academic performance, and retention rates, the role of self-regulation in moderating the negative effects of trauma in college students is poorly understood. The present study aimed to fill this knowledge gap by exploring the relationship between traumatic life events, academic performance, and self-regulation. We collected survey responses from 59 college students, asking them to self-report their general self-regulation, academic self-regulation, and traumatic life events. Academic performance was operationalized by their GPA. We found no significant correlation between traumatic life events and GPA. Students that rated themselves higher in self-regulation had marginally higher GPAs, but there was no support for the hypothesis that self-regulation moderates the relationship between traumatic life events and GPA. These findings advance our understanding of the critical variables that affect mental health, academic performance, and ultimately retention in college students. They demonstrate that traumatic life events may not necessarily hinder the academic performance of college students, although more research is necessary into what fosters resilience.

Keywords: College Students, Traumatic Life Events, Self-Regulation, Academic Persistence

1. Introduction

A substantial portion of people experience traumatic events over the course of their lives [1-3]. Traumatic life events—including illnesses, life-threatening accidents, abuse, death of a loved one, and violence—can negatively impact both mental and physical health [4-6]. Likewise, traumatic life events are also known to exert a negative effect on academic performance [7, 8, 9].

It has been reported that as many as 94% of college students have experienced a traumatic event in their lifetime [4, 10-13]. The adverse psychological effects that survivors of these events experience, such as depression, anxiety, hopelessness, and sadness, are associated with both lower GPAs and lower retention rates among college students [14, 15]. College students that have experienced trauma are more likely to exhibit lower attendance rates and higher drop-out rates than those with no history of traumatic life events, while those with

post-traumatic stress disorder (PTSD) from traumatic life events have been shown to be 73% less likely to finish their degree [7, 9].

Self-regulation—a foundational aspect of human functioning—is the dynamic process by which one monitors, controls, and modifies oneself, or one's thoughts, feelings, and behaviors to achieve a pre-determined goal [16, 17]. As self-regulation has been shown to influence motivation, thought processes, and emotional states in the pursuit of personal goals, it is not surprising that self-regulation also affects academic achievement [18, 19]. However, the effect of self-regulation on the relationship between trauma and academic achievement is unclear.

1.1. The Effect of Traumatic Life Events

Anders et al. (2012) compared college students who were exposed to traumatic life events over their lifetimes to students who were not using a survey that measured traumatic life

events and subjective well-being [4]. The authors hypothesized that the number of traumatic life events in a lifetime would be associated with a decrease in physical and mental health. They found that students who experienced more traumatic life events reported more unhealthy changes in both physical function (e.g., weight loss/gain, getting sick more often, increase/decrease in sleep) and mental function (e.g., increased depression, anxiety, and feelings of hopelessness and decreased life satisfaction) than those who reported fewer or no traumatic life events. Anders et al. (2014) later repeated the 2012 study, looking more narrowly at traumatic life events within a two-month period [5]. Again, they found that those who had experienced a traumatic life event in the preceding two months were not as mentally or physically healthy as those who had not. Thus, their research confirms that students who experience traumatic life events—whether over a lifetime or in a short period of time—experience adverse effects in comparison to those who do not [4, 5]. Overall, the negative consequences to mental and physical health for students who experience trauma have proven to be significant [4, 5].

Additionally, traumatic life events have been shown to negatively affect motivation to succeed, as well as self-regulation and academic satisfaction in college students [10, 13]. However, the negative effects of trauma are not consistent across all students, as some have been shown to be more affected than others. For example, traits such as self-regulation, resiliency, attachment styles, and social support have been shown to shape how students are affected by trauma [20]. Of these factors, self-regulation has been argued to be the most important [18, 21].

1.2. Self-Regulation and Academic Success

For students to be academically successful, they must be motivated to regulate their cognition, effort, and emotional reactions to classroom performance. Understanding self-regulation is therefore important because of its broad influences on motivation, thought processes, emotional states, and behavior [17, 18]. For example, a student with a high degree of self-regulation would be more likely to turn down a social opportunity the night before a test than a low self-regulator. In general, high self-regulators are more flexible in responding to the demands of situations they encounter, tend to be more successful at school and work, and have better psychological health in comparison to low self-regulators [18].

Pintrich and DeGroot (1990) explored motivational differences in 173 seventh graders to identify variables that predict academic performance [21]. Of the numerous variables they measured, self-regulation was among the best predictors of student academic achievement. Furthermore, Villavicencio and Bernardo (2013) investigated the relationship between emotions, self-regulation, and academic achievement and found that the emotions enjoyment and pride moderated the relationship between self-regulation and grades [22]. For students who reported higher levels of enjoyment *and* pride, self-regulation positively correlated with grades.

However, for students who reported *lower levels of pride*, self-regulation had no relationship with grades. Moreover, for those who reported *lower levels of enjoyment*, self-regulation negatively correlated with grades. Thus, the types of emotions and attitudes one has toward their studies are important in the context of achieving academic success, where increased positive feelings regarding school enhances the positive effects of self-regulation.

Duru et al. (2014) explored the relationship between student burnout and academic achievement (as measured by GPA; $n =$ 383) and found that self-regulation was positively associated with academic achievement, and that academic achievement was negatively associated with burnout [18]. More precisely, students who scored high on self-regulation had higher GPAs than students who scored lower on self-regulation, while students with higher levels of burnout had lower GPAs than students with lower levels of burnout. Importantly, self-regulation mediated the relationship between burnout and academic achievement. Duru et al. (2014) provided a compelling conclusion for why self-regulation is an important variable of interest:

Individuals with high self-regulation skills can manage their emotions, thoughts, behaviors, and time more effectively, and use their power and resources more successfully. At the same time, they have less emotional exhaustion, and show less indifference and apathy toward their academic responsibilities. [p. 1282, 18].

While the link between traumatic life events and i) poor academic performance [4, 7, 9, 15, 23, 24,], ii) poor mental and physical health [4, 5], and iii) decreased motivation to succeed [13] has been clearly established, the present study will explore the relationship between traumatic life events, self-regulation, and academic success.

1.3. The Current Study: Traumatic Life Events, Self-Regulation, and Academic Success

Very few studies have addressed the complex relationship between traumatic life events, academic success, and self-regulation. Bearing in mind that self-declaring traumatic life events do not necessarily equate with a PTSD diagnosis., Boyraz et al. (2016) found that PTSD in college students exerted a negative indirect effect on second-year enrollment via effort regulation—a student's ability to persevere at academic tasks in the face of challenges and distractions—and first-year GPA [10]. While this study examined the effect of PTSD on effort regulation, first-year GPA, and second-year enrollment, the authors did not examine the moderating effects of self-regulation, or whether self-regulation predicted the strength of the relationship between academic achievement and traumatic life events. Thus, the effect of self-regulation as a potential moderator on the relationship between traumatic life events and academic success has not been adequately explored.

To address this knowledge gap, the present study sought to elucidate the relationships between traumatic life events, academic success, and self-regulation among college students. We hypothesized i) that students with more traumatic life

events would have lower GPAs than those with fewer traumatic life events, ii) that students who are high self-regulators would have higher GPAs than low self-regulators, iii) that there would be a negative correlation between traumatic life events and self-regulation based on the findings of Boyraz et al., 2016 [24], and iv) that self-regulation would have a moderating effect on the relationship between traumatic life events and GPA.

2. Methods

2.1. Site and Participants

A total of 59 undergraduate students at a small college in Pennsylvania participated in the study. The college campus has approximately 600 students and is a commuter campus, as there are no dormitories. The mean age of participant was 22.1 years (SD = 6.4; Mdn = 21.0), with an age range of 18–56 years, and a mean GPA of 3.44 on a 4.0 scale (SD = 0.41). The sample included 34 individuals who identified as cisgender women and 23 individuals who identified as cisgender men (gender data were missing for two individuals). Overall, 52 (88.1%) identified as White. Twenty-two students were sophomores (37.3%), 21 were juniors (35.6%), and 16 were seniors (27.1%). Of 59 student participants, 57 reported at least one traumatic life event (M = 4.17, SD = 3.48; Mode = 3.00; Range = 0.00–20.0).

2.2. Instruments

Students completed a five-page survey that measured traumatic life events and self-regulation. As in the studies conducted by Anders and colleagues (2012, 2014), traumatic life events were assessed using the Traumatic Life Events Questionnaire (TLEQ) [4, 5]. The TLEQ is a 23-item survey that is part of an inventory to assess trauma history and is intended to be used as a treatment planning tool (for instrument validation, see [25]). The TLEQ asks about a variety of traumatic events, such as experiencing a life-threatening illness, family violence, sexual assault, or motor vehicle accident. Respondents answer *yes* or *no* to each item, reflecting whether they experienced such an event. Owing to time and survey length limitations, it was not practical to include all questions from the inventory; it was also not necessary, as we did not intend to treat or diagnose. Thus, we included only the first question related to each traumatic life event, which asked whether it had occurred or not.

We used two instruments to measure self-regulation. To measure general self-regulation, we used the 10-item "Self-Regulation Scale" [26]. A sample question asks the respondent to indicate agreement or disagreement—on a scale ranging from 1 (*not at all true*) to 4 (*completely true*)—with the statement "It is difficult for me to suppress thoughts that interfere with what I need to do" (Item 5). In keeping with Villavicencio and Bernardo in 2013 [22], we measured academic self-regulation using 22 items from the self-regulated learning strategies section of the 44-item

Motivated Strategies Learning Questionnaire (MSLQ) [21]. It is worth noting that Boyraz et al. (2016) also measured self-regulation using the MSLQ, but they used a different set of questions from a different version of the instrument [24]. A sample question on the MSLQ asks, "I find that when the teacher is talking, I think of other things and don't really listen to what is being said" (Item 46). The survey uses a scale that ranges from 1 (*not at all true of me*) to 7 (*very true of me*). Finally, the survey included five demographic questions on race, grade level, GPA, age, and gender.

2.3. Procedure

Upon approval by the Institutional Review Board (STUDY00010510), we selected a convenience sample from four classes (*Advanced Child Development, Introduction to Abnormal Psychology, Effective Writing: Writing in the Social Sciences*, and *Elementary Statistics*). Professors from those classes provided permission for the researchers to recruit students from their classes. Freshman level classes were intentionally excluded because freshmen would not have had a GPA to report during the fall data collection period.

Two copies of a consent form were handed out to every participant. They were instructed to read the form in full and to sign if they agreed to volunteer to participate. Participants turned in one copy to the researcher and kept the other. A researcher then handed out the survey and read aloud written instructions for the participants. Once they had completed it, students put the survey in a folder. The entire procedure took approximately 15 minutes. Participants were not immediately debriefed following the survey, as the campus is small and debriefing while data collection was ongoing risked contaminating the sample. Participants were encouraged to attend the campus research fair at the end of the semester to learn about the results.

2.4. Statistical Analyses

Gender comparisons on specific traumatic life events and academic performance and self-regulation were assessed using an independent t-test. Relationships between traumatic life events and academic performance and self-regulation were assessed via correlation analyses. Multiple regression analyses were used to predict the effects of independent variables on dependent variables in the present study. We used a moderator analysis to determine whether the relationship between two variables was dependent on (i.e., moderated by) the value of a third variable. All statistical analyses were performed in SPSS version 26. A *p*-value of <.05 was considered to be statistically significant.

3. Results

The total sample size of the present study was 59 students. The majority (96.6%) of students reported at least one traumatic life event, while 20 out of 59 students (33.9%) reported five or greater. There were no significant differences between men and women on traumatic life events, t(55)

=.154, p =.878, general self-regulation, $t(55)$ =.531, p =.598, academic self-regulation $t(54)$ =.721, p =.474, or cumulative self-regulation $t(54)$ =.775, p =.442.

There were also no significant correlations between GPA and both general and academic self-regulation. In addition, we noted no significant correlations between traumatic life events and GPA, general self-regulation, or academic self-regulation. The lack of significant correlations also held true when we tested the relationships between traumatic life event scores > 6.0 and GPA, general self-regulation, and academic self-regulation.

To gain a better understanding of the effects of specific types of traumatic life events on academic performance and self-regulation, we examined the relationship between i) the sudden and unexpected death of a close friend or loved one and ii) life threatening or permanently disabling accident, assault, or illness in loved ones. As a result, we found a near significant correlation between the sudden and unexpected death of a loved one and the cumulative self-regulation score, $r(56)$ =.25, p =.058, but not between death and GPA, general self-regulation, or academic self-regulation. There were also no significant effects of life-threatening illness, permanently disabling accident, assault, or illness of loved ones and GPA or cumulative, general, and academic self-regulation.

As expected, there was a positive correlation between traumatic life events and age, $r(57)$ =.339, p =.009, in which the older an individual was, the more traumatic life events they reported. There was also a positive correlation between age and academic self-regulation, $r(56)$ =.263, p =.046; however, only four students in the study were over the age of 30.

Furthermore, there was no significant correlation between cumulative self-regulation and traumatic life events (p >.05). However, as with the relationship between age and academic self-regulation, there was a positive correlation between age and cumulative self-regulation, $r(56)$ =.288, p =.029. There was a near significant positive correlation between cumulative self-regulation and GPA, $r(44)$ =.271, p =.068, and GPA and academic self-regulation, $r(44)$ =.263, p =.077.

A one-way ANOVA found no significant differences between grade level (i.e., sophomore, junior, or senior) and general, academic, or composite self-regulation. However, we did note a statistically significant difference between grade level and traumatic life events, $F(2)$ = 5.256, p =.008, in which the higher the grade level, the more traumatic life events were reported. Juniors reported significantly more traumatic life events (M = 5.81, SD = 4.09) than sophomores (M = 2.59, SD = 1.74).

We conducted a multiple regression analysis to predict student GPA from various potential predictors: age, gender, general self-regulation, academic self-regulation, and traumatic life events. The multiple regression model with all five predictors did not significantly predict student GPA, R^2 =.109, $F(5, 38)$ =.926, p =.475. Our model of five independent variables (predictors) explained only 10.9% of the variance in student GPA.

We also conducted a partial correlation to determine the relationship between an individual's GPA and the number of traumatic life events reported while controlling for self-regulation. There was no partial correlation between the dependent variable GPA (M = 3.44, SD = 0.41) and the independent variable traumatic life events (M = 4.0, SD = 3.4), while controlling for self-regulation (M = 132.8, SD = 16.7, $r(43)$ = −.069, n = 46, p =.652).

Lastly, we conducted a moderator analysis using a hierarchical multiple regression to assess the statistical significance of the interaction between traumatic life events and self-regulation. There was no moderator effect of self-regulation, as was evidenced by the addition of the interaction term explaining a non-significant additional 1.1% of the total variance (ΔR^2 =.011, $\Delta F(1, 42)$ =.491, p =.487). There was no significant relationship between traumatic life events and GPA at any level of self-regulation.

4. Discussion

The present study found no support for the hypothesis that students who report more traumatic life events would have lower GPAs than those with fewer traumatic life events. This finding was not consistent with previous research that found a negative relationship between traumatic life events and academic performance [4, 15]. The hypothesis that self-regulation would be positively correlated with GPA was marginally supported (p =.058). Students who scored higher on self-regulation tended to have higher GPAs, but the difference was not statistically significant. This pattern of results was consistent with previous research that found those with higher self-regulation skills tend to be more successful in school [18, 21].

The present study found no support for the last hypothesis that self-regulation moderates, or has any influence on, the relationship between a student's GPA and their history of traumatic life events. Although Boyraz et al. (2016) did not test self-regulation as a moderating variable, they did find that students who reported more traumatic life events had trouble regulating their effort, which negatively impacted their academic performance [10]. However, the final sample analyzed by Boyraz et al. (2016) (n = 484 students) reported lifetime exposure to traumatic events, in which 12.4% were diagnosed with PTSD [10]. The present study was not diagnostic and did not capture the temporal relationships of trauma in the students surveyed. As trauma is known to affect people differently, where the majority of people exhibit resilience and experience only brief subclinical symptoms to traumatic events, elapsed time since a traumatic event or the frequency with which trauma occurs could impact the variables assessed in the present study [27, 28]. Furthermore, Boyraz et al. (2016) used a different set of questions than the present study from a different version of the instrument [10].

Although gender differences were not a focus of the present study, our analyses showed that men and women did not differ on any of the measures tested. Gender differences are typically found on types of traumatic life events experienced [10, 20]. For example, women are more likely to report sexual abuse

and emotional abuse [10]. However, we did not analyze how men and women reported on each trauma type within the questionnaire, as this was beyond the scope of the current study.

We also found that students who were older or at a higher grade level had experienced more traumatic life events. This finding was expected, as older participants have had more time to experience more traumatic life events than those who are younger. Additionally, the older an individual was, the higher they scored on the self-regulation scale. This was also unsurprising, as teenagers transitioning into young adulthood would be expected to improve how well they regulate themselves and self-regulation is known to be positively correlated with age [29].

In the sample in the present study, the multiple regression model including age, gender, traumatic life events, academic self-regulation, and general self-regulation could not predict a student's GPA. Statistically significant models depend on sample size and the strength of the underlying relationships. The latter is more likely the issue in the present study since we did not find the expected co-relationships between our variables of interest. It is also possible that the relationship is not linear. A successful model could be used to help identify future students at risk of academically underperforming and dropping out, and thus more research is necessary to elucidate the relationship between traumatic life events, academic performance, and college persistence.

The present study has several notable limitations. First, the student sample at the college campus in the present study may not be representative of the college samples used in previous studies. This campus is a small commuter campus, and most students live at home. The contributions of systems (e.g., families, communities, services) are thought to help in coping with adversity (see Herrman et al., 2011 for review [28]), and could buffer the negative effects of traumatic life events that previous studies predicted. The sample mean GPA of 3.44 was also unusually high (*SD* =.41), compared to the campus mean GPA of 3.12 that semester (Registrar, personal communication, January 26, 2021). Thus, we may not have captured enough underperforming students (especially those with traumatic life experiences) to adequately explore the role of self-regulation in explaining college persistence. We speculate that the unusually high GPA reflected the classes surveyed rather than a representation of students on campus. Two of the sections of math and English selected tend to have a lot of students in majors such as engineering and nursing—programs that require higher GPAs. A broader sample in future studies, perhaps including multiple institutions, would address this issue.

The decision to use the number of traumatic life events experienced as a proxy for trauma was also likely a limitation. The number of such events may not necessarily reflect trauma or trauma symptoms. For example, Schultz and Skarstein (2021) showed that the majority of students reported negative changes in academic performance, poor

concentration, and "feelings of chaos" 2.5 years after a single, shared traumatic event (the Utøya massacre of July 22, 2011) [8]. The full TLEQ diagnostic instrument does include a follow-up (*yes* or *no*) question about whether the participant experienced "fear, helplessness, or horror" [30]. Although including this follow-up would have given us a more robust measure, it still would not have captured the full extent of how traumatic an event was to the participant—something a scaled response would better accomplish. Additionally, we did not capture the frequency of the occurrence of traumatic life events or when the traumatic event(s) occurred, unlike the final sample analyzed by Boyraz et al. (2016), which all reported lifetime exposure to traumatic events [10]. Future studies should use an instrument that accounts for these limitations to accurately measure the impact of traumatic life events.

Finally, we offer one final recommendation for future research—to include an additional predictor variable that is purported to be as important to college persistence as self-regulation: resilience. Resilience is positive adaptation, or the ability to "bounce back" in response to adversity [28, 31, 32]. As there are thought to be multiple contributing factors and intersecting pathways to resilience, from biological to social, resilience can vary over time and can be supported by social support and community factors [28]. Social support has even been shown to moderate both genetic predisposition to and environmental risks for psychopathology in maltreated children [33]. Elucidating the relationship between resilience and self-regulation in the face of trauma could help to identify ways to support students and ultimately increase retention. Banyard and Cantor (2004) found that trauma survivors who felt a greater sense of control over their lives or their response to their trauma tended to be more resilient in adjusting to college and performed better academically [20]. Likewise, students with high levels of resilience have been shown to overcome their trauma more quickly than students with lower levels of resilience [34]. Thus, including both variables—self-regulation and resilience—would assess the predictive power of each, both individually and combined. Perhaps the students with trauma who are most likely to academically succeed are those who score high in both self-regulation *and* resilience.

5. Conclusions

The college experience may exacerbate mental health issues for students with traumatic life experiences and/or symptoms of trauma, which can contribute to burnout, poor academic performance, and ultimately decreased retention. However, not all students are equally affected, and where some students drop out, others persevere. Why? The "why" is the driving force behind this line of research, which is critical given that the majority of college students have experienced at least one type of trauma. We need to better understand this student population so that institutions can provide the necessary support to increase resilience and ultimately retention. Better support could be an increase in education in mental health for

school counselors, academic advisors, and faculty mentors, and it may lead to improved academic and support systems, the provision of mental health screenings, and the greater availability of mental health resources. Although we did not find evidence for the hypothesized role of self-regulation, we hope our challenges, limitations, and recommendations encourage improvements in methodology for those who study college students with trauma and provide a roadmap for the inclusion of resilience in future studies that investigate the role of self-regulation in explaining college persistence in students with trauma.

Data Availability Statement

The datasets generated and/or analyzed during the current study are available in Scholarsphere repository (http://doi.org/10.26207/edsg-2163).

Statements and Declarations

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

Contributions

All authors contributed to the study conception and design. Material preparation, and data collection were performed by Samantha Long-Mitchell. Analysis was performed by Aris Karagiorgakis. The first draft of the manuscript was written by Samantha Long-Mitchell and was re-written for publication by Aris Karagiorgakis.

Ethics Approval

The current research received ethics approval from Penn State University's Institutional Review Board (IRB# STUDY00010510).

Consent to Participate

Informed consent was obtained from all individual participants included in the study.

Consent for Publication

The authors grant the publisher permission to publish this manuscript.

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Conflicts of Interest

The authors declare no conflicts of interests.

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