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Exploring the Effects of Academic Achievement, Class Engagement, and its Motivations on University Students' Mental Well-being

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Abstract: Education in the modern era expects institutions to help students to thrive. Not only may class engagement improve academic performance, but it may also enhance students' well-being. This study investigated class engagement and its motivation and academic achievements' effect on university students' mental well-being. 231 university students, with a mean age of 21.46, participated in this study. About 65% were senior students, and average GPA was 3.46 (SD = 0.32). For measurements, General Class Engagement Scale, Motivations for Class Engagement Scale, and Warwick-Edinburg Mental Well-being Short Form was employed. Academic achievement was measured by GPA. For data analysis, Pearson correlation analysis and regression analyses were conducted. Results show that class engagement, its motivations, academic achievement, and mental well-being were all positively correlated. Moreover, class engagement and its motivations positively predicted mental well-being. However, GPA was non-significant. Hence, in a group of mostly senior university students, class engagement was more significant than academic achievement regarding their mental well-being. Furthermore, about 91% of this study's participants were honor students (above 3 GPA). Therefore, being academically successful may not always be enough to be happy and well. However, educators may help students by emphasizing class engagement.

Keywords: *Academic achievement, class engagement, mental well-being, motivations for class engagement.*

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Introduction

Classroom engagement involves actively being in the moment, attentively listening, focusing on the lesson, and, beyond that, actively participating by speaking up, asking questions, and interacting with the teacher and fellow students, all within the context of the learning process. Merely attending classes and passing exams in individuals' academic lives proves to be inadequate for long-term learning, educational, and personal development (Eryılmaz, 2014). In order to facilitate active engagement in one's educational journey, individualized goals, and milestones can contribute to personalized progress within the learning experience (Reschly & Christenson, 2006). This approach may positively influence both motivation and active learning, thereby assisting students in achieving academic success and experiencing academic and emotional fulfillment. Therefore, academic achievement, class engagement and its motivations may contribute to students' mental well-being.

For a student to be in the present during class and engage in the lecture that is been held, three engagement conditions would be at present: behavioral engagement, cognitive engagement, and emotional engagement (Eryılmaz, 2014; Jimerson et al., 2003; Reschly & Christenson, 2006). Behavioral engagement consists of serial behaviors such as being active in class, preparing for the class and studying the topics, doing homework, and participating in extracurricular activities in school (Jimerson et al., 2003; Reschly & Christenson, 2006). Behavioral engagement during class is significantly important for learning and teaching starting from traditional learning activities (Lane & Harris, 2015). Behavioral engagement in class usually considered as a positive factor for academic achievement, but it may also be important for emotional engagement and creating a positive learning climate in class (Böheim et al., 2020; Gregory et al., 2014).

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Another prospect of class engagement is cognitive engagement. For cognitive engagement to be established, students would make connections between the newly obtained information and previous learned information, make cognitive relations of class information and daily life and have personal motivations and purposes in regard to learning (Eryılmaz, 2014; Reschly & Christenson, 2006). When students set personal goals for learning, plan, motivate themselves, monitor their learning and evaluate their progress they can achieve deep level cognitive engagement. These cognitive actions promote learning, and its motivations therefore can increase long term learning and motivate for future studies (Blumenfeld et al., 2005). Different from traditional education perspective, modern education wants to promote personal motivation, interest and curiosity for learning to establish a society of knowledge (Parsons & Taylor, 2011).

In traditional class engagement perspective, students expected to be behaviorally and later on cognitively engaged in class. However, many recent studies discuss students' emotional climate and engagement during class as an important factor (Linnenbrink-Garcia & Pekrun, 2011; Reyes et al., 2012). Students' emotional class engagement comprise of feelings of belonging in school, being in positive relations with other students and teachers during class, willing to engage in class and feelings of curiosity and interest (Eryılmaz, 2014; Reschly & Christenson, 2006). Students' emotional engagement with their teachers is also associated with their emotional engagement with other students (Ulmanen et al., 2016). Therefore, it can be said that when teachers' positive emotional relations with students may also provide a positive emotional climate for all students to engage in.

New perspective for learning and education, *Education 4.0*, disclosures the importance of innovation and lifelong learning side with personal interest and curiosity for further development and progression as a society (Öztemel, 2018). Education 4.0 highlights leadership, cooperation, creativity alongside with emotional intelligence, problem solving, global citizenship, and teamwork (Öztemel, 2018). Indeed, classrooms are a great place to learn and experience these skills so that students can align with what is expected for future society. With being emotionally, cognitively, and behaviorally engaged in class, students may practice for new skills stated above so that they can flourish and participate in a greater society.

For students to engage in class they need some motivation to act on engagement. What is defined as motivation is the answer to *"Why am I doing this?"* regarding to a certain act (Eryılmaz, 2013). Therefore, motivations for class engagement are the answers students give to themselves about why they should actively participate in a class. In Eryılmaz's (2010) study for discovering students' motivations for class engagement, 4 sub-dimensions emerged, i.e., being in a positive emotional and physical state, being in positive relations with the teacher, being prepared to class, and experiencing flow during class. Being motivated to class engagement may be more than just a factor that increases students' classroom active participation; it could also be a factor that enhances their academic skills and contributes to their overall well-being. In a study conducted with adolescents, being motivated to class engagement was found to be positively related to students' academic self-efficacy (Akeren, 2020). Identifying life goals that can fall within the scope of well-being (Eryılmaz & Aypay, 2011b) and subjective well-being (Eryılmaz & Aypay, 2011a) were found to positively predict adolescents' motivation to attend class. In other words, motivations for class engagement may be a factor that supports students' mental well-being. According to data of a meta-analysis on classroom climate and student wellbeing, positive classrooms may contribute to both student engagement and less distress for students (Wang et al., 2020). Another study investigated class engagement and subjective well-being of student and results show that students in specialized classes are more likely to engage in class and their well-being higher compared to other students (Orkibi & Tuaf, 2017). A longitudinal study in UK, revealed that in a sample of university students, although engagement may differ during the semester, engagement and well-being of the students were positively correlated. However, authors suggest further research on the topic with more advanced analysis than correlation analysis and investigating motivations for better understanding causalities (Boulton et al., 2019). Another study conducted with middle schoolers found that school engagement contributes to students' well-being and academic achievement (Pietarinen et al., 2014). Despite studies on engagement and university students' well-being are present in literature, it is seen that this relationship was investigated through academic engagement (Martínez et al., 2016), social media engagement (Alt, 2018), and general school engagement (Cleofas, 2020).

As it stated above, there are some links between students' mental well-being, their class engagement, and academic achievements. However, these links need to be investigated further in different samples or more advanced analyses for better understanding. Current literature displays some positive associations between students' class engagement and general well-being (Boulton et al., 2019) and subjective well-being (Eryılmaz & Aypay, 2011a). But current understanding of class engagement and its significance is limited in the education system in Turkey. This study may provide some further findings on class engagement and its positive effect on student well-being and draw some attention to its importance. Additionally, academic achievements' importance and their effect on student well-being are traditionally considered very momentous. However previous research found that academic achievement may not always predict or directly affect student mental well-being (Bücker et al., 2018; Dimitrijević et al., 2018). Therefore, more findings are needed to understand if and how academic achievement affect university students' mental well-being.

In this study, it is aimed to investigate the relations between class engagement, motivations for class engagement, academic achievement, and university students' mental well-being. In this regard, four research questions are presented:

1. Are there significant correlations between class engagement, motivations for class engagement, academic achievement, and mental well-being?
2. Does class engagement predict university students' mental well-being?
3. Do motivations for class engagement predict university students' mental well-being?
4. Does academic achievement predict university students' mental well-being?

Methodology

Research Design

In this study relations between university students' mental well-being, class engagement, its motivations and academic achievement were aimed to investigate. The correlational research design is incorporated when correlational relationships between two or more quantitative variables want to be examined (Asamoah, 2014). Therefore, in this study, a correlational research design was employed.

Participants and Data Collection

This study was designed to investigate in a university student universe. Accordingly, the sample of the study consisted of university students who are currently enrolled in an undergraduate program. Some examples to participants enrolled program are psychological counseling and guidance, early school education, mathematics and science education, and social sciences education. In total 231 university students participated in the study. The mean age of the participants was 21.46 (SD = 2.28). The distribution of gender among the participants was as 184 female students and 47 male students. Most of the participants were currently on 4th (last) year of their undergraduate program. The distribution of class status among the participants is as following: two 1st year students, 52 2nd year students, 25 3rd year students and 152 4th year students. The average GPA was 3.46 (SD = 0.32). Among the participants, the lowest GPA was 2.27 and the highest was 3.96 over 4. The descriptive statistics of the participants are presented in table 1.

A Google Forms survey was created with this study's questionaries. The survey's link was shared with volunteering participants through social media. Also, the author got in contact with professors at universities in Istanbul. The professors helped to share links with student WhatsApp groups. The author also visited some lectures and invited students to participate in the study. The total survey took approximately 5 minutes to fill. Participants were informed that they could close the form if they changed their minds about participating.

Table 1. Participants' Descriptives

Variables	n	%
Gender		
Female	184	79.7
Male	47	20.3
Age		
19	26	11.3
20	33	14.3
21	70	30.3
22	65	28.1
23	25	10.8
24 and older	12	5.2
Enrolled undergraduate class status		
1st year	2	0.9
2nd year	52	22.5
3rd year	25	10.8
4th year	152	65.8
GPA		
2.2 to 3	21	9.1
3 to 3.5	86	37.2
Above 3.5	124	53.7

Measurements

To measure this study's variables, self-report questionnaires were employed. A demographic information form was created by the author including questions regarding participants' gender, age, and enrolled undergraduate class. To measure academic achievement, participants provided their current GPA. To measure class engagement Eryılmaz's (2014) General Class Engagement Scale, to measure motivations for class engagement, Eryılmaz's (2010) Motivations for

Class Engagement Scale, and lastly, to measure mental well-being, Warwick-Edinburg Mental Well-being Short Form was employed.

General Class Engagement Scale was developed by Eryılmaz (2014) to measure university students' overall class engagement, rather than engagement regarding to a specific class. The questionnaire has 3 sub-dimensions namely emotional engagement, behavioral engagement and cognitive engagement. The measurement development study was conducted with 105 females and 104 males. The scale is a 4-point Likert type, answered between 1 (strongly disagree) to 4 (strongly agree). A sample item from the scale is "*I participate in classroom activities*". The Cronbach alpha values for reliability were calculated sub-dimensions and the as a total score questionnaire. The reliability values were as following: For emotional engagement .84, for behavioral engagement .86, for cognitive engagement .84, and for the total score .92. The reliability coefficients for this study were as following; Cronbach's alpha was .91, McDonald's omega was .91, and Guttman's lambada 6 was .94.

The Motivations for Class Engagement Scale was developed by Eryılmaz (2010) to measure students specific motivation sources for class engagement. The 4-point Likert type scale has 4 sub-dimensions; being in a positive emotional and physical state, being in positive relations with the teacher, being prepared to class and experiencing flow, and it is answered between 1 (strongly disagree) to 4 (strongly agree). A sample item from the scale is "*When the teacher is friendly, my desire to participate in the lesson increases.*". The one factor loaded, total score scale's Cronbach alpha reliability value was calculated as .91 (Aypay & Eryılmaz, 2011). The reliability coefficients for this study were as following; Cronbach's alpha was .95, McDonald's omega was .95, and Guttman's lambada 6 was .97.

Warwick-Edinburg Mental Well-being Short Form was originally developed by Tennant et al. (2007) as a 14 itemed 5-point Likert type scale. Later, the reliability study of the 7-itemed short form of the scale was conducted by Stewart-Brown et al. (2009). The short form was found reliable and valid among Swedish participants, and subsequently employed in many other languages and cultures. A sample item is "*I've been feeling relaxed*.". The Turkish adaptation of the form was done by Demirtaş and Baytemir (2019). The reliability scores of the form in Turkish samples were .84 and .86. The reliability coefficients for this study were as follows; Cronbach's alpha was .85, McDonald's omega was .85, and Guttman's lambada 6 was .85.

Data Analysis

A series of statistical analyses was conducted as part of this research. Initially, normality, homogeneity and outliers of data were assessed. Later, a Pearson correlation analysis was conducted. Three separate regression analyses were conducted to investigate relationships between this study's different variables and mental well-being. The reason for separate regression analyses is that when two or more variables enter a regression analysis, some bias may occur that may affect the prediction effect of different independent variables on the dependent variable (Podsakoff et al., 2003). When different independent variables enter the analysis together, their associations among themselves may affect the results in predicting the dependent variable (Podsakoff et al., 2012). Therefore, in this study, it was preferred to conduct three different regression analyses for three different independent variables of the study. By doing so, it is intended to control some common method bias (Podsakoff et al., 2012).

Results

To investigate the relations between student's mental well-being, academic achievement, class engagement, and its motivations, initially normality and homogeneity of the data were tested. All normality and homogeneity values for the study variables fall between the acceptable range between -2 and +2 (George & Mallery, 2019). Descriptive values of the study variables are also calculated. Additionally, data was checked for outliers but no significant outlier was found. Descriptive, skewness, and kurtosis values of the study variables are presented in Table 2.

A Pearson correlation analysis was conducted to examine the correlations between study variables. University students' mental well-being was correlated with GPA, class engagement, and motivations for class engagement. Moreover, GPA was correlated with class engagement and its motivations in a positive direction. Additionally, as expected, class engagement and its motivations were positively correlated.

Table 2. Descriptive Statistics and Correlations

	Descriptive Statistics				Correlations		
Variables	**Mean**	**SD**	**Skewness**	**Kurtosis**	**1**	**2**	**3**
1. Mental Well-being	23.65	4.98	-0.19	-0.33	—		
2. GPA	3.46	0.32	-1.03	0.98	.19**	—	
3. Class engagement	48.81	10.24	-0.10	0.17	.48**	.25**	—
4. Motivations for class engagement	64.52	9.92	-1.11	1.71	.31**	.13*	.49**

** p < .01, * p<.05

To further understand the relations between students' mental well-being and GPA and class engagement 3 linear regression analyses were conducted. In the first regression analysis, class engagement significantly predicted students' mental well-being ($R = .479$, $r^2 = .229$, $F = 22.496$, $p < 0.001$). All sub-dimensions of class engagement were significant, and they predicted 23% of the total variance. Results of the second regression analysis show that GPA predicted university students' mental well-being ($R = .190$, $r^2 = .036$, $F = 8.534$, $p < 0.01$). However, it predicted only 4% of the total variance. It is argued in the recent literature that even if a regression analysis is significant, the value of r^2 is needed to be assessed (Ozili, 2023). It is argued that for social sciences, an r^2 value of at least 0.1 (10%) or higher may be interpreted as significant for the hypothesized model (Ozili, 2023). Based on the literature, the regression results for GPA in this study may be interpreted as non-significant.

Lastly, motivations for class engagement were entered into the regression analysis by its sub-dimensions. Although the total regression analysis was significant, all sub-dimensions were non-significant ($p > 0.05$). Therefore, another analysis was conducted, and this time motivations for class engagement entered the analysis by one total factor. This analysis was significant ($R = .312$, $r^2 = .097$, $F = 24.656$, $p < 0.001$). In this regard, it is seen that motivations for class engagement were only significant as a united value, rather than its sub-dimensions. As one total factor, motivations for class engagement significantly predicted 10% of students' mental well-being. However, based on the value of r^2, this effect may be interpreted as small (Ozili, 2023). Table 3 demonstrates the results from regression analyses.

All variables' estimate values for regression analysis were confronted according to 95% confidence interval. The confidence interval provides stronger and more reliable conclusions when testing estimates (Hazra, 2017). All estimates fall between the calculated lower limit and upper limit regarding confidence interval (see Table 3).

Table 3. Results of Regression Analyses for Student Mental Well-Being

Variables	Estimate	SE	95% CI		p
			LL	UL	
Constant	13.417				
GPA	2.958	1.01	.963	4.952	.004
Constant	12.013				
Class engagement					
Emotional engagement	.211	.96	.022	.400	.029
Behavioral engagement	.212	.73	.068	.357	.004
Cognitive engagement	.282	.96	.092	.471	.004
Constant	13.553				
Motivations for class engagement	.157	.032	.094	.219	.000

Discussion

In contemporary times, research within the realm of positive psychology has illuminated the multifaceted factors that influence individuals' well-being (Boniwell & Ryan, 2012; Eryılmaz, 2009; Seligman & Csikszentmihalyi, 2000). Adopting a positive psychology perspective, an engaged life emerges as a pivotal domain for individuals' overall well-being (Eryılmaz, 2017; Seligman et al., 2004; Sirgy & Wu, 2009). Within this context, motivation and engagement serve as indicators of a participatory lifestyle, particularly significant for university students. The present study endeavors to scrutinize the relationships between these pertinent indicators and the mental well-being of individuals.

This study investigated university students' class engagement and academic achievement's effect on their mental well-being. Initially, a Pearson correlation analysis was conducted, and the results showed that all study variables were positively correlated. Starting from discussing the positive correlation between class engagement and its motivations, motivations are the starting the power for different behaviors. Self-determination theory explains motivation in two direction, intrinsic and extrinsic (Deci & Ryan, 2016). While intrinsic motivations are decided by the individual's themselves for their own good, extrinsic motivations may push the individual toward a wanted behavior. When individual intrinsically or extrinsically motivated, they may cooperate with autonomy, competence and relatedness while satisfying their needs (Ng et al., 2012).

Deci and Ryan (2016) elaborate on explicit motivations for students' studying and academic achievement. Although, a system built on rewards for achievement and punishments for failures may seem like it would increase expected outcomes such as academic achievement, Deci and Ryan suggest that it is not the punishments that increase positive outcomes, but it is the encouragements, reinforcements, and rewards that motivates students for academic or any other desired outcomes (Deci & Ryan, 2016; Ryan & Brown, 2005). Self-determination theory proposes an autonomy-based approach which assumes that individuals would be active and engaged in encouraging and positive environments. Hence motivations for class engagement include not only intrinsic motivations, e.g., being prepared for the class, but it is also incorporated with positive extrinsic motivations such as experiencing positive relations with teachers during the class (Eryılmaz, 2010). Being intrinsically motivated naturally makes students to engage by feeling interest and enjoyment. On the other hand, if intrinsic motivations are fully incorporated with extrinsic motivation, students may focus and

experience autonomy even if the target behavior is not interesting to them (Deci & Ryan, 2016; Ryan et al., 1985). Therefore, it is possible to say that if a positive class climate, reinforcements, and relations are integrated to the class experience along with the intrinsic motivations, students may engage in class even if the class is not personally interesting for them. This study's findings showed a positive correlation between class engagements and its motivations, which includes intrinsic and extrinsic motivations, and it is aligned with Self-determination theory's discussions on desired classrooms in the literature. Therefore, this result may highlight considering students' motivations for class engagement for educators who want to build a positive and enhancing classroom.

When relations between class engagement and GPA are considered, literature on class engagement supports this study's results. Recent research found that class engagement may increase students' academic self-efficiency and contribute to their academic achievement (Akeren, 2020). Previous research by Gunuc (2014) also found that class engagement is positively correlated with academic achievement, and class engagement (emotional, behavioral and cognitive) predicted 10% of the total variance of academic achievement. Results from a large sample study indicated that class engagement may increase academic achievement, however, students with previous academic failures may need additional support to raise their grades (Dotterer & Lowe, 2011). Moreover, Olivier et al.'s (2019) study found that class engagement may be an indicator of academic achievement and well-being in middle schoolers. This study's findings are aligned with the literature above and supports the positive correlations between class engagement and academic achievement in university students. Educators may address class engagement in their classes and provide a classroom that presents an environment for all dimensions of class engagement; emotional, behavioral, and cognitive. The current position in class engagement in Turkey may be focused on behavioral and cognitive engagement, but this study's results show that emotional engagement also may be important. However, descriptive statistics such as correlation analysis are not efficient enough to signify causality between variables. Therefore, although there may be a positive link between school engagement and university student's academic achievement, future studies may focus on further analysis such as structural equation modeling with longitudinal research design.

Based on this study's results, positive correlations were found between university students' mental well-being, class engagement, and academic achievement. Looking into the literature, a path analysis showed that positive school experiences, such as class engagement, positively influence students' academic achievement and their well-being. As positive academic and well-being outcomes are expected to be achieved in the education system, positive school experiences including school engagement are highlighted for educators (Murray-Harvey, 2010). However, the link between academic achievement and mental well-being do not always show a positive prediction and strong correlations. For example, in Bücker et al.'s study (2018), academic achievement and subjective well-being were significantly correlated, in positive direction. However, students with low academic achievements were not necessarily unhappy (low subjective well-being), and students with high academic achievements were not necessarily happier neither.

The results of this study are also parallel with Bücker et al. (2018). The regression analysis showed that GPA predicted mental well-being, however, the explained variance was too small, only 4%. For researchers to say "the X variable has an effect on Y variable" there has to be some percentage of explained variance of Y in the tested model (Ozili, 2023). The acceptable range of explained variance changes according to the science field. In social sciences, 50% of explained variance is considered as strong prediction and 10% to 50% is considered as moderate effect. However, when explained variance is under 10% in a significant regression model, it may be interpreted as non-significant or too small an effect to consider significant (Ozili, 2023). Therefore, according to this study's results, GPA did not significantly predict mental well-being. And being academically achieved did not mean higher mental well-being. This result highlights the importance of supporting students in all developmental dimensions such as social relations with friends and family, romantic relationships, career steps, etc. Not all academically successful students may have high mental well-being, some may need support in other aspects of life to be more well. As educators, academics' only responsibility is not giving lectures in classes and taking exams. Supporting students with emotional engagement may also be very important. And for institutions, these results show that providing counseling and guidance services is highly prime. Not all universities have enough sources for counseling and guidance services. Career guidance centers may not be enough to enhance students, but mental well-being services are also very important to address. Of course, the economic aspect of these services needs to be considered, to provide counseling services in a limited time and with limited staff, group counseling programs are suggested.

According to this study's results, class engagement positively predicted 23% of the mental well-being. Motivations for class engagement in general were also significant but had a small effect on mental well-being. Many studies on motivations and class engagement found that these variables may positively contribute to academic achievement and performance in higher education (Atik & Çelik, 2021; Raza et al., 2020; Sheldon & Krieger, 2007; Wu, 2019). Considered together class engagement and being motivated to engage in class may contribute to the well-being of university students' by satisfying their needs (Deci & Ryan, 2016). This study's regression analyses were aligned with these discussions. Although motivations for class engagement might have a positive effect on mental well-being, it may not directly affect mental well-being, but it may positively and directly affect class engagement. And class engagement might act as a mediator in the link. Since motivations are the starting power for behaviors, motivations for class engagement may

increase class engagement, and class engagement may increase students' mental well-being. Thus, this hypothesized serial mediation needs further investigation to better understand.

An important descriptive aspect of this study was that almost all participants were successful university students, and 91% of them were honor students. However, the regression analysis showed that academic achievement was a small to non-significant effect in enhancing students' mental well-being. When elaborating on these results, another description of the participants becomes important which is 65% of them were senior students. University students may have to confront many stressors such as academic pressure, family, friend or romantic conflicts, future anxiety, uncertainties, financial worries, physical or mental health problems, adaptation problems, loneliness, and more (Hamaideh, 2011; Logan & Burns, 2023). Senior students may experience more stress compared to other students, because of future and career anxiety based on uncertainties along with their personal problems such as family, friendship, or romantic issues. Therefore, they might need more happiness and well-being sources including achievement but not alone. While engaging in class the teachers also help students to fulfill their emotional and social needs along with their academic interests. Hence class engagement may be an overall positive factor for the social, emotional, and academic needs of university students, and creating an environment for class engagement may be important for helping students to thrive.

Conclusion

This study's correlation analysis showed that class engagement, its motivations, academic achievement, and mental well-being were all positively correlated. Class engagement positively predicted university students' mental well-being, and motivations for class engagement in general had a small positive effect. This may point out for future studies that motivations of class engagement might play a mediating role over class engagement but not a direct effect on mental well-being. On the other hand, academic achievement (GPA) was non-significant in predicting mental well-being, among highly successful university students. Fulfillment of academic achievement is considered as one of the sources of happiness and well-being, but as it was in this study's results, it may not always predict well-being. Stressful factors such as personal problems or academic and career uncertainty may negatively affect students' mental well-being. Especially senior students may feel the pressure of other stressors even if they are academically successful. But class engagement may help enhance students' mental well-being by fulfilling their emotional and social needs along with academics.

Recommendations

Based on this study's results some suggestions are made for educators and institutions. Firstly, teachers may put emphasis on class engagement and involve students in the process. They may address class engagement, why it is important, and what are sources of motivations are there to engage in class. In other words, why should a student engage during the class? The traditional answer of "Because it helps to get better grades" may not satisfy all students but discovering that class engagement also supports emotional and cognitive proses during class may motivate more students to engage. It is encouraged to further investigate class engagement and its positive affect on university students with longitudinal research design and more advanced analysis such as structural modeling.

Moreover, psychoeducation programs may be designed to increase students' class engagement and its motivations. This program would address several motivations for class engagement and also discover personal motivations, information about emotional, cognitive, and behavioral engagement and what are the benefits of them, discovering the state of students engagement, and practicing on engagement in the psychoeducation. With this kind of psychoeducation content, students may increase their awareness on class engagement and engage more in class in every dimension, namely emotional, behavioral, and cognitive. It may also enhance their mental and subjective well-being and GPA, therefore it recommended to measure these variables also.

Secondly, when creating a syllabus for a university class, academic staff may consider how their class could help students to engage. Does it provide enough time and attention for brainstorms, discussions, drama activities, student presentations, and more? Or does it seem more based on the professor giving a lecture? Of course, an academic lecture is highly valued, but students' engagement in class may help students to learn better while fulfilling some of their emotional and social needs. Therefore, at the end of the class, a holistic development could be achieved.

Thirdly, senior students may experience a lot of stressful events. Presenting supporting factors to seniors may help enhance their mental well-being. Along with teachers, universities, and institutions may present positive opportunities, especially for senior university students. Such as open support groups, specified group counseling groups, social activities along career activities. Further studies may investigate class engagement and other positive engaging school activities effect on university students' mental well-being.

Limitations

This study found some relations between university students' mental well-being, class engagement, and academic achievement. However, there are several limitations to this study. To measure study variables, self-reporting measurements was employed in this study. Self-reporting questionaries are assuming participant honestly answered the items, and at the same time questionaries are valid for measuring the target variable. There are also some limitations to

the study group, participants were mostly senior-class students, and academic achievement, GPA, were mostly high. These demographics are important when generalizing this study's results to a population. This study's results only may be generalized for a population with similar demographics within this study. Another limitation is that this study investigated the study variables with Pearson correlation analysis and multiple regression analysis. Multiple regression analysis is an advanced statistical analysis, providing information for predicting the power of independent variables on dependent variables. However, to understand causalities, longitudinal research designs are suggested.

Ethics Statements

In this study, the Helsinki Declaration was followed. Ethical approval was obtained from the Yildiz Technical University Ethical Board. An explanation of the study purpose and ethical rules was given at the beginning of the study survey. A confirmation question was required for participants to confirm. If the participant does not approve, he/she closes the survey and gives up participation. Thus, informed consent was obtained. In terms of ethical principles, the data will be stored by the author in an encrypted cloud for 5 years. It will be destroyed at the end of the 5-year period.

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