Research article

A sex-stratified multiple regression on Jordanian adolescents' life satisfaction using different elements of school climate

Abdullah S. Alshammari [a],[*], Bettina F. Piko [b], Kevin M. Fitzpatrick [c]

[a] Doctoral School of Education, University of Szeged, Hungary
[b] Department of Behavioral Sciences, University of Szeged, Hungary
[c] Department of Sociology & Criminology, University of Arkansas, Fayetteville, AR, USA

A B S T R A C T

Background: School climate is one of several important factors influencing adolescent well-being and life satisfaction. Although a growing number of studies investigate the role of school climate, they often apply a global scale and only a few of them measure any specific elements. Likewise, most studies are focused on well-being and not life satisfaction.
Aim: The purpose of this study is to investigate how different elements of school climate (teacher responsiveness, disruptive behavior, positive mutual bonds, classroom atmosphere, growth) are related to life satisfaction among a sample of Jordanian high school students.
Methods: Using a self-administered and online questionnaire, the sample consists of adolescents from public schools located in northern Jordan (N = 2141, aged 13–18 years).
Results: Jordanian high school students' levels of life satisfaction were higher for girls [$t(2139)$ = -8.2, $p < .001$]. Disruptive behavior correlated negatively with classroom atmosphere (r = -0.50; $p < .001$ among girls and r = -0.45; $p < .001$ for boys); teacher responsiveness was positively correlated with growth (r = 0.49; $p < .001$ for girls and r = 0.61; $p < .001$ for boys). However, the role of disruptive behavior was different for girls (negative) compared to boys (positive), although these correlations were weak. In multiple regression analyses, teacher responsiveness (β = 0.22; $p < .001$) and positive mutual bonds (β = 0.19; $p < .001$) were largest contributors to life satisfaction beyond self-assessed socioeconomic status (β = 0.27; $p < .001$). Age (β = -0.08; $p < .01$) and growth (β = 0.27; $p < .001$) were significant only for boys.
Conclusions: These results demonstrate the importance of examining different elements of school climate in an effort to better understand adolescents' life satisfaction. Certain gender differences may highlight differences in social needs across different classroom settings which require further investigation.

1. Introduction

Adolescence is often associated with some pretty drastic biological-anatomical changes for children as well as shifts in their social network which rapidly restructures towards increasing peer orientations. All these changes can have a profound effect on their well-being (Levesque, 2011). Life satisfaction is a subjective well-being indicator that assesses an individual's quality of life based on their own criteria (Maddux, 2018). Life satisfaction, as an important measure of well-being, is defined as a global judgment of one's life (Levin et al., 2012). A number of factors influence adolescent life satisfaction including but not limited to emotional, social and behavioral constructs (Proctor et al., 2009). We usually find gender

differences in levels of life satisfaction: although in most cases boys tend to be more satisfied (Goldbeck et al., 2007), some studies report the reverse (Al-Attiyah and Nasser, 2016). Likewise, age can be an essential factor impacting life satisfaction: younger adolescents are usually more satisfied with their life (Badri et al., 2018), while older ones have more identity problems and are less satisfied (Goldbeck et al., 2007; Kroneman et al., 2009). Besides age and gender, family affluence (social status) is associated with adolescent life satisfaction, as well as other familial variables, like parent-child communication or family structure and functioning (Levin et al., 2012; Moreno-Maldonado et al., 2020).

Beyond family, the school domain seems equally important to consider since youth spend a lot of time in school. Earlier studies mainly

focus on problems with school achievement, school maladjustment, and poor attitudes towards school and teachers (that is, negative school experiences, e.g., social stress, anxiety, depression, and negative parent relations, and interpersonal relations, see Gilman and Huebner, 2006; Crede et al., 2015; Piko and Hamvai, 2010). Other research finds that being happy with school and academic achievement was associated with adolescents' overall life satisfaction in both girls and boys (Piko and Hamvai, 2010). Within the school environment, school climate may be of particular relevance in contributing to adolescents' life satisfaction. Relative to others, however, we know less about the role of school environment in life satisfaction, particularly in Arabic culture. In addition, although a growing number of studies investigate the role of school climate, they often apply a global scale and only a few of them measure any specific elements. Since few research studies have looked at this association between school climate and life satisfaction, generally among adolescents in Arabic cultures, specifically in Jordan (Shaheen et al., 2014; Arabiat et al., 2018), we build on research findings from Western cultures, however, where appropriate and available, studies from Arabic countries are included.

1.1. School climate

School climate is a critical marker for child and adolescent life including social, emotional, and academic domains. Research has documented the quality of school climate: Arthur Perry released the world's first book on the importance of school climate, more than 100 years ago entitled *Management of a City School* (1908). In it, he discussed the importance of providing a suitable and high-quality school environment for students (Perry, 1908, p. 303): "School climate refers to the quality and character of school life". School climate depends on the experiences of students, families, teachers, and decision-makers in school life (National School Climate Center, 2019). There are different definitions of school climate and various scales have been used along with a variety of scales (elements). Basically, it refers to emotions, behaviors, interpersonal relationships, norms and values, social interactions, school environment (physical, psychosocial, learning). That is, school climate can be viewed more of a complex concept instead of one solid construct. However, there is a consensus that school climate is related to the quality and features of school life, in the way that participants experience them (Mousena and Raptis, 2021).

The intersection of school climate and student outcomes has particular relevance to a number of theories focusing on specific social and cultural dimensions. For instance, bio-ecological theory is one of the important theoretical foundations of school climate research, by focusing on multicontextualism, proximal processes, and growth over time, varying school climate dimensions are argued to impact student development at any age during school life and, it is non-specific to any particular dimension of school climate or developmental period (Wang and Degol, 2016).

Based on a literature review provided by Wang and Degol (2016), school climate is described as multidimensional which includes four key categories (academic, community, safety, and institutional environments) as well as being malleable, where specific features enable teachers, researchers, and policymakers to understand the students' experiences in school which helps to establish more efficient and effective student interventions (Wang and Degol, 2016). In another study, elements of school climate were described as teacher responsiveness, disruptive behavior, positive mutual bonds, classroom atmosphere or growth (Bekken et al., 2015). These elements refer to different dimensions of school climate. Teacher responsiveness assesses the responsiveness of teachers towards the children's specific needs, paying attention to them with respect and teacher support. Disruptive behavior means bullying, arguing, kicking and beating in the classroom. Positive mutual bond includes positive peer behavior such as being nice to each other and having friends in the class. Classroom atmosphere can be e.g.,

messy or noisy providing supportive or obstructive environment for learning. Finally, growth refers to positive judgment of learning, such as its importance for future.

1.2. School climate and school children's behavior, mental health and well-being

As mentioned above, school climate is a complex concept which can be measured either globally or its different elements; an advantage of the latter one is that we can evaluate the role of each one which can be altering. In global measurements, positive school climate remains one of the most effective protective factors against aggressive and violent behavior, and bullying (Espelage et al., 2014; Lyons et al., 2014; Suldo et al., 2008), dropout, absenteeism, truancy, and drug use among adolescents (Heffner and Antaramian, 2016). It contributes to the improved health status of adolescents, along with marked declines in health risk behaviors (Gautam and Punia, 2017; Wang and Dishion, 2012). Positive school climate also has been found to be associated with fewer reported depressive symptoms among adolescents (Bradshaw et al., 2017; Shim-Pelayo and De Pedro, 2018). A multilevel longitudinal study was conducted to examine whether poor school climate might contribute to the risk of developing depressive symptomatology. Results showed that adolescents experiencing positive school socioeducational environment (e.g., social climate, learning opportunities, fairness) were less likely to report depressive symptoms (Briere et al., 2013). In addition, school environments appear to have a greater influence on risky behaviors during adolescence for girls compared to boys.

Although our knowledge of the role of different elements of school climate and its impact on life satisfaction is limited, we know more about their role in impacting mental health. For example, Kuhn et al. (2015) found that disruptive behaviors in the classroom were seen as a threat to an optimal learning environment and often combined with adolescents' lower self-esteem, anxiety, depression or aggression. Teacher responsiveness, on the other hand, contributes to student's better mental health by encouraging them to seek professional help when needed (Halladay et al., 2020). Among high school students, the school environment, and teacher and peer support particularly, can play a significant role in lowering the risk for suicidal ideation and suicide behaviors (Madjar et al., 2018). Finally, social atmosphere of the classroom as well as having academic goals (growth) are strongly related to student well-being (Kim et al., 2021).

1.3. School climate and life satisfaction

Several studies document the association between certain aspects of school climate and life satisfaction or well-being (Aldridge et al., 2016; Kutsyuruba et al., 2015; Lester and Cross, 2015; Suldo et al., 2013). Students that perceive a greater sense of school connectedness were more likely to be satisfied with their life (Aldridge et al., 2016). These findings are consistent with another study: Higher levels of life satisfaction among students were associated with greater perceptions of each of the six elements of school climate (namely, order and discipline; sharing of resources; parent involvement; bullying; student interpersonal relations; student-teacher relations) (Suldo et al., 2008). Also, school climate factors related to feeling safe at school, feeling connected to school, and peer support are all protective factors associated with more positive mental and emotional health over the students' transition period from primary schooling to secondary schooling (Lester and Cross, 2015). Furthermore, adolescents with a higher level of school well-being typically have higher levels of academic achievement and are more engaged in school (Gutman and Vorhaus, 2012). Prior research suggests that school climate and life satisfaction are related. However, the relationship of different elements of school climate with adolescents' life satisfaction needs further investigation, especially in the context of Jordanian school environment.

1.4. Cultural context

It is important to take into account the specific cultural context of any school-related research. In the specific case currently being examined, Jordanian adolescents have Arabic values and beliefs that are considerably different from Western ones. Jordanian values and beliefs are shaped by the Islamic religion (Al-Hassan and Takash, 2011) and thus these values, beliefs, and cultural mores can play an important role in the perception of mental health such as depression and life satisfaction (Dardas and Simmons, 2015). In addition, gender may play a more important role in determining these relationships between school climate and well-being, particularly in patriarchal, male-dominated societies in the Middle East (Wahsheh and Hassan, 2012).

On the other hand, Jordan is facing significant cultural shifts that have it progressing closer to Western values and societal perceptions as socioeconomic changes impact the culture and norms, and particularly Jordanian adolescents exhibited similar patterns of risk behaviors than their Western counterparts (Malak, 2015). Youth aged 14–24 represent the largest age group in Jordanian society, most of them are school students (Department of Statistics [Jordan], 2021) and the school environment may be of particular significance for this age group when assessing their mental and emotional well-being (Dardas et al., 2019). More research is needed on the role of school climate among Jordanian student's well-being and life satisfaction, particularly concerning the different elements of school climate. This is extraordinarily important time to begin to map different cultures and their unique school climate outcomes which typically have been an under-investigated field of research, e.g., Arabic countries.

1.5. Present study

In this current paper, we focus our efforts on better understanding the role of different elements of school climate and their relationship with youth's life satisfaction among Jordanian adolescents. We are especially interested in specific elements of the school climate that have not yet examined (see Bekken et al., 2015). Thus, we implement a cross-sectional study designed to investigate how elements of school climate (namely, teacher responsiveness, disruptive behavior, positive mutual bonds, classroom atmosphere or growth) are related to life satisfaction among Jordanian high school students. One study from Jordan justified a positive association between a global scale of school climate (e.g., "Our school is a nice place to be") and emotional well-being (Shaheen et al., 2014), but this was a global scale and did not measure any specific elements of school climate. In addition, this study has been focused on well-being and not life satisfaction. Since previous studies reported age and gender differences in adolescent life satisfaction both in Western and Arabic cultures (e.g., Al-Attiyah and Nasser, 2016; Goldbeck et al., 2007), we also analyze data separately for boys and girls, including relevant sociodemographics, such as age and social class self-assessment.

More specifically, our study investigates the following questions: 1) Among Jordanian high school students, what are the relationships between life satisfaction and various elements of school contexts including teacher responsiveness, disruptive behavior, positive mutual bonds, classroom atmosphere or growth?, 2) In multiple analyses, controlling for a range of sociodemographics, which school climate elements are the most important to explaining Jordanian high school student life satisfaction?, and 3) Are there any significant gender differences found in the relationships between school climate and well-being outcomes among this sample of Jordanian students?

2. Method

2.1. Participants and procedure

A descriptive, large-scale cross-sectional study was conducted from October 2019 to January 2020 in public schools of Irbid governorate located in northern Jordan affiliated with the Jordanian Ministry of Education. Multistage cluster sampling was used to recruit students from 8th to 12th grades for both sexes. At the first stage, after using a simple random sampling by lottery technique, a sample of four districts (Bani Obaid, Al-Ramtha, Irbid Qasabt, and Al-kora districts) was selected from a list of all eight districts in Irbid governorate and then the names and numbers of public schools were obtained in these districts. Data were collected by a self-administered and online questionnaires administered to 2141 students (13–18 years old, mean age was 15.9 years and SD = 1.4 years; 50.2% males). We asked 2160 students to participate in our study, 2141 students participated giving a response rate of 99.1%.

This research and all study procedures were approved by the Doctoral School of Education, University of Szeged Institutional Review Board (IRB) and the state-level Jordanian Ministry of Education. Informed consent required parents/guardians' signature which was provided. Confidentiality and anonymity were carefully protected and ensured during all stages of the study. After IRB approval, the administration of the survey was standardized. First, the researchers provided a simple explanation of the importance of the research and students were free to participate in the research without any pressure from school or parents, as well as having the right to refuse to answer any question and withdraw from the study at any time without any penalties. All students recruited for the study were invited to voluntarily assent and obtain signed consent forms from their parents. On the following day, written consent forms, which were signed by parents, were collected from students by the researchers. Data was collected in the computer labs during the leisure or sports classes for the students through an online survey that was developed by the researcher using Google forms.

2.2. Measures

The questionnaire asks students about their life satisfaction and health behavior as well as general sociodemographic information (age, gender, family affluence - assessed by the students as socioeconomic status, that is, SES self-assessment: lower, lower-middle, middle, upper-middle and middle classes).

The students' life satisfaction was measured by the Arabic adapted version (Abdallah, 1998) of The Satisfaction With Life Scale (Diener et al., 1985), which contained 5 items (e.g., "*In most ways my life is close to my ideal*") designed to measure global cognitive judgments of one's life satisfaction. Students indicated how much they agreed or disagreed with each of the 5 items using a 7-point Likert scale that ranged from 1 (= 'strongly disagree') to 7 (= 'strongly agree'). Summed scores were used in the analyses where higher scores reflect higher levels of life satisfaction. The scale was reliable with a Cronbach's alpha = .86.

The School Climate Inventory (SCI) is a 23-item scale measuring school climate, with items using a five-point Likert-scale (1 = 'I do not agree' to 2 = 'I partially disagree', 3 = 'I neither agree nor disagree', 4 = 'I partially agree' and 5 = 'I agree') (Bekken et al., 2015). The original Dutch/English instrument was translated and adapted to Arabic language by the authors. First, translation and back translation was performed by bilingual translators. Then a pilot study was conducted prior to the main study that consisted of a sample of 112 students to measure the reliability and understandability of the questionnaires, validate its content, and check its appropriateness to Jordanian culture. The Inventory distributes on five fields/elements with the following number of items in each field: Teacher responsiveness (professional behavior and in particular the responsiveness of teachers towards specific needs of the students: 5 items, e.g., "*The teachers help us with problems*" or "*The teachers teach well*"); Disruptive behavior (disruptive behavior in the classroom: 5 items, e.g., "*There is bullying/arguing in the classroom*" or "*We bully each other in the classroom*", "*Classmates kick and beat each other in the classroom*"); Positive mutual bonds (mutual positive peer-behavior in the classroom, being nice to each others: 4 items, e.g., "*My classmates are nice*" or "*I like my classmates*"); Classroom atmosphere (the degree to which students are able to work on their schoolwork in the classroom,

whether the environment is messy, noisy or quiet: 4 items, e.g., "*There is a lot of noise in the classroom*" – inverse item) and Growth (the extent to which the students think they learn worthwhile things at school: 4 items, e.g., "*What I learn here is useful for my future*"). Item 22 was skipped since it was not used in any of the scales. The Dutch and Jordanian students had similar mean values for school climate indicators. The Cronbach's alpha values varied between .75 and .91 in the Netherlands (N = 389) (Bekken et al., 2015), while in our sample, they varied between .70 (Disruptive behavior) and .88 (Teacher Responsiveness).

2.3. Data analysis

Data were analyzed using SPSS statistics V25. Descriptive statistics provide the study demographics using means, and standard deviations (SD). Bivariate relationships were presented using Pearson correlations among the study variables. The relationship between school climate variables and students' life satisfaction was assessed using multiple linear regression (enter method). A sex-stratified multiple regression analysis was also presented to detect any significant gender differences among the relationships of interest. Collinearity diagnostics were conducted to help further examine the reliability of the models.

3. Results

3.1. Descriptive statistics

Descriptive statistics by gender are displayed in Table 1. Girls scored higher on life satisfaction [$t(2139) = -8.2$, $p < .001$], teacher responsiveness [$t(2139) = -8.1$, $p < .001$], positive mutual bonds [$t(2139) = -12.1$, $p < .001$], and growth [$t(2139) = -15.2$, $p = .001$], while boys scored higher on disruptive behavior [$t(2139) = 3.3$, $p < .01$]. Difference in reported classroom atmosphere was not significant between boys and girls (p > .05).

3.2. Bivariate relationships by gender

Correlations among the study variables also are provided in Table 1. Correlation coefficients can be found for boys above diagonal and for girls below the diagonal. For both genders, life satisfaction was positively related to teacher responsiveness ($r = 0.46$, $p < .001$ for boys and $r = 0.35$, $p < .001$ for girls) as well and positive mutual bonds ($r = 0.42$, $p < .001$ for boys and $r = 0.31$, $p < .001$ for girls) and growth ($r = 0.48$, $p < .001$ for boys and $r = 0.24$, $p < .001$ for girls). While these elements showed higher value for boys, classroom atmosphere seems to be related only to girls' life satisfaction ($r = 0.12$, $p < .001$). On the contrary, disruptive behavior correlated positively with boys' life satisfaction ($r = 0.06$, $p < .05$), while for girls, the correlation was not significant.

Table 2. Multiple regression estimates (enter method) of students' life satisfaction with collinearity statistics ($N = 2141$).

Predictors	B (SE)	β	Tolerance (VIF)
Gender	0.18 (0.31)	0.03	0.87 (1.15)
Age	-0.25 (0.10)	-0.04*	0.95 (1.05)
SES self-assessment	2.34 (0.15)	0.27***	0.98 (1.02)
Teacher responsiveness	1.60 (0.17)	0.22***	0.60 (1.66)
Disruptive behavior	-0.03 (0.17)	-0.004	0.74 (1.34)
Positive mutual bonds	1.48 (0.16)	0.19***	0.72 (1.40)
Classroom atmosphere	-0.07 (0.14)	-0.01	0.73 (1.36)
Growth	0.33 (0.05)	0.16 ***	0.59 (1.71)
Constant	-0.49		
R²	0.33***		

Notes. B = unstandardized, SE = Standard Error, β = standardized regression coefficient.
*$p < .05$. **$p < .01$. ***$p < .001$.

However, we should note here that some of the correlation coefficients reported are very small even though statistically significant (especially the ones where $r < 0.2$).

Other important differences between SCI scales and gender are noted, particularly regarding disruptive behavior. While this variable was negatively associated with class atmosphere in both genders ($r = -0.45$, $p < .001$ for boys and $r = -0.50$, $p < .001$ for girls), it was positively related to mutual bonds among boys ($r = 0.11$, $p < .05$), and negatively among girls ($r = -0.07$, $p < .05$). Likewise, the relationship with teacher responsiveness was also in the opposite direction ($r = 0.08$, $p < .05$ for boys and $r = -0.10$, $p < .05$ for girls). In addition, disruptive behavior among girls was negatively correlated with growth ($r = -0.10$, $p < .01$). Similar to the previous results, however; these correlations tend to be relatively small.

3.3. Multiple regression analysis

Since our data were normally distributed and meet the other linear and error-related criteria, we applied multiple linear regression analysis. Table 2 presents the results of sociodemographics (gender, age, SES self-assessment) and the SCI scales as factors related to students' life satisfaction (as dependent variable) in a linear regression (using the enter method). Gender was not related to SWL, while older students showed less life satisfaction. Among the SCI scales, positive mutual bonds ($β = 0.19$; $p < .001$), teacher responsiveness ($β = 0.22$; $p < .001$) and growth ($β = 0.16$; $p < .001$ were positively related to students' life satisfaction. In terms of sociodemographics, SES self-assessment was positive ($β = 0.27$;

Table 1. Descriptives and correlations by gender for SCI subscales and life satisfaction among Jordanian adolescents ($N = 2141$).

	Means (SD) Males Females	1	2	3	4	5	6
1. Teacher responsiveness#	3.6 (1.1) 4.0 (1.0)	_	0.08*	0.51***	0.12***	0.61***	0.46***
2. Disruptive behavior#	2.9 (1.0) 2.7 (0.9)	-0.10**	_	0.11*	-0.45***	0.01	0.06*
3. Positive mutual bonds#	3.7 (1.1) 4,2 (0.9)	0.33***	-0.07*	_	0.11***	0.42***	0.42***
4. Classroom atmosphere	3.1 (1.2) 3.2 (1.2)	0.22***	-0.50***	0.17***	_	0.13***	0.05
5. Growth#	3.8 (1.1) 4.4 (0.8)	0.49***	-0.10**	0.32***	0.19***	_	0.48***
6. Life satisfaction#	21.6 (8.1) 24.4 (7.7)	0.35***	-0.05	0.31***	0.12***	0.24***	_

Notes. Correlation coefficients. Boys above diagonal and girls below. *$p < .05$ **$p < .01$ ***$p < .001$.
#$p < .001$ (Student t-test).

$p < .001$) and age was negative ($\beta = -0.04; p < .05$) predictors. Namely, older students and those from lower social classes (as perceived by them) showed less life satisfaction. Gender was not related to SWL. Combined, the variables explained 33 percent of the variation in life satisfaction. One assessment of model reliability showed VIF (Variance Inflation Factor) values were within the optimal range (<2), indicating that multicollinearity was not present in any of the regression models.

Since there were significant gender differences in levels of both dependent and independent variables and also found among some of the correlations, we tested gender*predictor interactions first for the possible confounding effect of gender on the relationship between school climate and life satisfaction. Although the interaction variables did not modify significantly the effects of the previous model, the interaction gender*-growth proved significant ($\beta = -0.37; p < .001$). In the next step (Table 3), multiple regression estimates were examined for girls and boys separately. Teacher responsiveness and positive mutual bonds were significant (positive) factors for both boys and girls. Two differences were detected: age ($\beta = -0.08; p < .01$) and growth ($\beta = 0.27; p < .001$) both contributed only to boys' life satisfaction. While age was negatively associated with the dependent variable, growth was positively. These variables explained 37 percent of the variation in boys' life satisfaction, while explaining 27 percent of the variation in girl's life satisfaction.

4. Discussion

In this study, the purpose was to investigate how different elements of school climate (namely, teacher responsiveness, disruptive behavior, positive mutual bonds, classroom atmosphere, and growth) were related to life satisfaction among Jordanian students. We believe that these results help us better understand social needs and gender differences in a special cultural context.

First, while studies in Western societies report a tendency of male adolescents' to have higher levels of life satisfaction (e.g., Goldbeck et al., 2007), our study showed girls scoring higher than boys. This finding is consistent with another Arabic study in which females reporting being more satisfied with their lives than males (Al-Attiyah and Nasser, 2016). While in patriarchal Middle Eastern societies, women may have fewer possibilities than men, life satisfaction can be correlated with other factors for them, e.g., they receive more financial support and caring from their family providing security and thus girls in these societies may have fewer social and economic burdens than boys (see Al-Attiyah and Nasser, 2016).

Results of bivariate associations indicated that school climate indeed played an important role in adolescent life satisfaction, particularly in the case of specific elements. This is congruent with a previous Jordanian study conducted by Shaheen et al. (2014). In this study they found that students who reported a more positive global school climate and were

more likely to have better emotional well-being and to be less involved in bullying behavior. However, this study investigated only global school climate and no other studies from Jordan have included any specificements so far. While our data revealed significant correlations between the above mentioned elements of school climates and life satisfaction among adolescent students of Jordanian schools, other studies from the Western world also report similar results for different subdimensions of school climate (e.g., Suldo et al., 2013). These findings are also similar to previous Western studies reporting a positive relationship between school climate and students' well-being (Lester and Cross, 2015; Kutsyuruba et al., 2015).

The correlation analysis draws our attention to several gender differences and similarities in bivariate associations. First, for both boys and girls, life satisfaction was positively correlated with teacher responsiveness, positive mutual bonds and growth. Among boys, these associations showed stronger correlations than for girls, even though some of them were weak. Previous studies also reported a positive role of teacher responsiveness and peer support or growth in helping determine student mental health and well-being (Halladay et al., 2020; Kim et al., 2021; Madjar et al., 2018); our findings suggest that these elements of school climate can also contribute to students' life satisfaction.

There are further correlations which are worth noting and highlight possible future research directions, although these correlations have relatively small values. Above all, experiencing disruptive behaviour showed a negative correlation with classroom atmosphere in both boys and girls, similar to a previous study where it had a negative impact on the learning environment and students' mental health (Kuhn et al., 2015). However, while girls' life satisfaction showed a positive relationship with better classroom atmosphere, boys' life satisfaction was positively associated with disruptive behavior (both weak correlations). The association between experiencing disruptive behavior in the classroom was negative with mutual bonds among girls but positive among boys (both were weak correlations). In earlier studies, boys had a higher risk of problems with school engagement and achievement (Heffner and Antaramian, 2016). All these findings suggest that when male adolescents have lower life satisfaction they tend to be at greater risk for engaging in or positively evaluating disruptive behavior (such as bullying) compared to girls. The differences between boys and girls regarding attitudes toward disruptive behavior can be attributed to differences in socialization: boys are more socialized to engage in or positively evaluate (even physical) aggression, while girls are expected to be more gentle and well adapted (Hellström and Beckman, 2019; Kroneman et al., 2009); biological background (variations in brain development or sex hormones) may also contribute to these differences. Not surprisingly, classroom atmosphere proved to be more important for girls compared to boys.

Multiple regression analyses provided the primary focus of results particularly since some correlations did not remain significant. First, multiple regression findings indicate that life satisfaction is lower among older adolescents. This finding is consistent with other studies that found older students reporting lower levels of life satisfaction compared to younger students (e.g., Badri et al., 2018). While age only slightly contributed to adolescents' life satisfaction, SES self-assessment was significant, as previous studies reported (Levin et al., 2012). Since this is a subjective indicator, those who said they belonged to upper classes were more satisfied with their lives assuming that they indeed have more possibilities in life.

Furthermore, multiple regression findings indicated that three elements of school climate (namely, positive mutual bonds, teacher responsiveness, and growth) were significant factors for understanding Jordanian students' life satisfaction. These findings are consistent with studies in Western context, e.g., with a study conducted by Lester and Cross (2015) that found life satisfaction connected to school, peer support, connectedness to teachers and feeling safe at school. Another study also reported that student-teacher relations and parental involvement in schooling were predictors of students' life satisfaction (Suldo et al., 2008). These results suggest that social relationships – particularly with

Table 3. Multiple regression estimates (enter method) for life satisfaction differences between boys vs. girls.

Predictors	BOYS (n = 1075)		GIRLS (n = 1066)	
	B (SE)	β	B (SE)	β
Age	-0.44 (0.14)	-0.08**	-0.06 (0.15)	-0.01
SES self-assessment	1.96 (0.20)	0.24***	2.95 (0.24)	0.32***
Teacher responsiveness	0.25 (0.05)	0.17***	0.40 (0.05)	0.26***
Disruptive behavior	-0.02 (0.05)	-0.01	0.02 (0.05)	0.01
Positive mutual bonds	0.34 (0.05)	0.19***	0.42 (0.06)	0.19***
Classroom atmosphere	-0.07 (0.05)	-0.04	0.04 (0.05)	0.03
Growth	0.51 (0.06)	0.27***	0.08 (0.07)	0.04
Constant		1.33		0.37***
R^2		-1.89		0.27***

Notes. B = unstandardized, SE = Standard Error β = standardized regression coefficient.

*p < .05. **p < .01. ***p < .001.

both teachers and classmates – can contribute to adolescents' life satisfaction. Besides this, students also found relevant growth, that is, thinking of school as a worthy place in terms of their future aspirations.

Since correlation studies indicated some gender differences not only in levels of life satisfaction but in their correlates as well, regression analysis was conducted specifically to examine these relationships by gender. Two significant differences emerged: age and growth both contributed only to boys' life satisfaction. The role of age was also justified by other studies (e.g., Badri et al., 2018). Our results found that girls not only reported higher levels of life satisfaction but that this relationship did not change with increasing age. Findings also suggest that growth – although it was a significant contributor regardless of gender – was more important for boys. It may be possible that boys tend to think more about school and how they can profit from studies in terms of their future work plans, which may be slightly less important for girls. Clearly, more research is needed to find additional explanations for this gendered result since life satisfaction is a complex concept and it may be additionally complicated by other life domains including home, or other, social circumstances of life in general.

5. Limitations

While we believe that these findings are noteworthy, there are some important limitations to this study that should be noted when interpreting our findings. First, our study is cross-sectional which cannot provide any cause-and-effect relationships. This is a common limitation of many studies, which can only be overcome by longitudinal design. While reliability values are good for the school climate measurement, and it seems culturally appropriate, further adaptations and validation are necessary on Jordanian children and youth populations. Furthermore, measures of school climate and life satisfaction are based solely on self-reports. The variance explained in multiple analyses is moderate and additional variables should be added that may be relevant for adolescent life satisfaction. Finally, we should also be careful about over-emphasizing significant correlations, which can be due to the large sample size, and some of these smaller associations need further investigation.

However, this study will hopefully trigger further studies that contribute to a better understanding of how different elements of school climate may be related to life satisfaction among Jordanian adolescents. To the best of our knowledge, this is the first study providing results for the relationship between several elements of school climate and life satisfaction in this Middle Eastern region. Further research needs to be conducted with other populations in different regions other than Jordan. It would also be useful to include cultural variables in future studies since these were not evaluated in this study.

6. Conclusions

Overall, our findings suggest the following: 1) Jordanian high school students' level of life satisfaction is greater among girls compared to boys; 2) Teacher responsiveness and positive mutual bonds play the most important role in life satisfaction in addition to SES self-assessment; 3) Some gender differences are noted in the relationships between study variables: the role of disruptive behavior is different for girls (negative) and boys (positive) in life satisfaction, while growth and age are significant correlates of life satisfaction only for boys.

In cultural context, the most relevant results are in concordance with studies in Western context: Positive mutural bonds, teacher responsivenesses and growth played the most decisive role in students' life satisfaction. These findings reflect the process of changing cultural and social norms to a Western type and that adolescents are particularly susceptible to these changes. Some differences, however may draw our attention traditional differences in gender socialization, e.g., the greater importance of growth in boys' future career or the importance of classroom atmosphere and general well-being as protective agents for girls.

In conclusion, our findings demonstrate the underlying importance of examining the impact of school climate on life satisfaction among adolescents. Certain gender differences highlight vast differences in social needs found in classrooms. Our findings strengthen calls for educators, policymakers and researchers to give greater attention to improving school climate that can in turn guide intervention programs that would promote student life satisfaction and school, better academic achievement, and general well-being among Jordanian students. Beyond the significance of this study for the Jordanian population, these findings would be useful for experts who work with developing educational, psychological and health promotion programs for children and youth in the area of refugees and migrants. There is also a need for the help of social workers or psychological counselors in the school in promoting students' life satisfaction and school.

Declarations

Author contribution statement

Abdullah S. Alshammari: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Bettina F. Piko: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Kevin M. Fitzpatrick: Analyzed and interpreted the data; Wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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