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SHORT COMMUNICATION

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Socioeconomic status, social-cultural values, life stress, and health behaviors in a national sample of adolescents

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Abstract

Adolescence is a developmental period during which time individuals adopt health behaviors that affect their lifelong health and disease risk. Socioeconomic status, social-cultural values, and stress have all been hypothesized to play a role in this association, but very few studies have examined how these factors interrelate and explain differences in health behaviors in adolescence. To address this issue, we assessed youths' socioeconomic status, social-cultural values, life stress levels across seven domains, and health behaviors in a national sample of 1,830 high school seniors living in the four largest cities in Croatia. Structural equation modelling examined the extent to which stress mediates the effects of socioeconomic status and social-cultural values on positive and negative health behaviors. As hypothesized, stress levels significantly mediated associations between youths' socioeconomic status, social-cultural values, and healthy and unhealthy habits. Additionally, whereas better socioeconomic status predicted less stress, greater social-cultural value on achieving a "good life" predicted more stress. More stress, in turn, was associated with engaging in fewer healthy behaviors for both males and females, and more unhealthy behaviors for males. Socioeconomic status and social-cultural values thus appear to influence stress levels, which may in turn affect adolescents' health behaviors and, potentially, their lifespan health.

KEYWORDS

adolescence, culture, health behaviors, life stress, social, socioeconomic status

1 | INTRODUCTION

Adolescence is a critical developmental period during which time lifespan health and disease risk trajectories are heavily shaped (Viner et al., 2012). During adolescence, for example, individuals acquire psychosocial skills they need to meet normative developmental challenges and they also learn strategies they will use to cope with stressful circumstances that will invariably arise during the lifespan (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Adolescence is also when health behavior patterns begin to solidify, with healthy behaviors (e.g., good diet and regular exercise) becoming increasingly common for some teenagers and harmful habits (e.g., drug use and sedentary lifestyle) becoming routine for others (Viner et al., 2012).

Likewise, adolescence is a developmental period marked by elevated stress, due in part to an increased focus on social status and belonging, challenges associated with navigating peer relationships at school and increasing independence from parents, and the development (and dissolution) of significant romantic relationships (Arnett, 1999). The relationship between stress and health is complex, but at least two major mediating pathways have been identified

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(Contrada & Baum, 2011). First, stress can directly affect health by activating autonomic, neuroendocrine, and inflammatory processes that lead to preclinical and clinical disease states over time (Slavich, 2016, 2019, in press). Second, as alluded to above, stress can indirectly affect health by increasing how often individuals engage in harmful health behaviors, such as eating fatty foods, drinking alcohol, and smoking, and by decreasing how often they engage in beneficial health behaviors, such as exercising regularly and eating well (Cartwright et al., 2003; Krueger & Chang, 2008; Ng & Jeffery, 2003; Park & Iacocca, 2014). Stress is thus known to affect adolescents' health behaviors and lifespan health. How these associations are influenced by more macro factors such as socioeconomic status (SES) and social-cultural values, however, remains unclear.

Prior research has documented a close relationship between SES, stress, and health. For example, studies have shown that SES is a strong determinant of lifespan health (Marmot, 2017; Wilkinson & Marmot, 2003), with lower SES being associated with poorer health (Manrique-Garcia, Sidorchuk, Hallqvist, & Moradi, 2011) and greater psychological distress (Kessler & Cleary, 1980; McLeod & Kessler, 1990). It is not fully clear which processes account for the better health trajectories of persons who are higher on the SES gradient, but it has been hypothesized that such individuals may have less pronounced physiologic reactivity to stress and may be able to cope better with life stressors than their lower SES counterparts in part because of their larger support networks and greater material resources (Matthews & Gallo, 2011; Slavich, in press).

Although only limited research exists on how stress–health behavior associations are influenced by cultural factors, culture is ever present and deserves much more serious attention in research on stress and health in adolescents. The fundamental reason for this is that several factors that affect health, including SES, are strongly moderated by culture (Hobfoll, 2001). In prior ethnographic studies, we have adopted a contextually based *emic* approach that involves investigating the role of culture by obtaining a locally meaningful perspective of culture that is based on the observations, explanations, and interpretations of individuals who belong to the group being studied. Supporting the validity and importance of this anthropological approach to stress research are data showing that culture strongly shapes health outcomes, including psychosocial stress levels and stress-related biomarkers (e.g., Dressler, Balieiro, & Santos, 2017; McDade & Worthman, 2004). In addition, we have used this approach to study the ideal of a "good life" and "good living" among Croatian youth (Peternel, Malnar, & Martinović Klarić, 2015, 2017). Despite the importance of applying an emic approach for understanding human health and development, however, locally informed cultural perspectives are very rarely applied to understanding relations between stress and health behaviors in adolescence, even though these constructs are culturally embedded.

The overarching purpose of the present study was to integrate the typically disparate lines of research described above in order to achieve a more comprehensive understanding of factors that influence health behaviors in adolescence, which is a critical period for shaping habits that affect lifelong disease risk. To our knowledge, very few studies have examined associations between SES, locally determined assessments of social and cultural values, perceptions of stress, and youths' propensity to engage in healthy and unhealthy behaviors. In this study, therefore, we modelled associations between these processes in a unique national sample of high school seniors throughout Croatia. Croatia's student retention ranks first in the European Union, with only 3.1% of students being considered "early leavers" from the educational system. Nevertheless, senior year is a particularly stressful time for many Croatian youth as it is when these students typically make several critical life decisions that will greatly impact their adulthood years, including whether they should attend college, look for their first major job, and/or leave the family and seek to become self-sufficient.

Given the research described above, we focused on two main macro sources of psychological stress in adolescence—namely, SES and the locally based cultural ideal of the good life—and examined how these processes relate to adolescents' stress levels and how stress levels are in turn related to health behavior patterns. We know of no studies that have examined associations between these factors in adolescents. On the basis of prior research with adults, however, we hypothesized that SES and social-cultural values would be associated with youths' stress levels, which would in turn be associated with their health behaviors. More specifically, we hypothesized that stress may act as a mediator linking SES and social-cultural factors with adolescents' health behaviors, which could in turn have implications for their lifespan health.

2 | METHOD

2.1 | Participants

The population of Croatian secondary school students in their final year of education comprises just over 45,000 youth. To obtain a national sample of this target population, we applied probabilistic two-stage cluster sampling to identify students completing either typical high school (i.e., gymnasium) or vocational high school located in the four largest Croatian cities (i.e., Zagreb, Split, Rijeka, and Osijek). Students in an average urban high school in Croatia come mostly from that city and the surrounding suburbs, but also from nearby small towns, villages, and rural areas. The high schools sampled thus included students raised in both urban and rural environments.

The high schools were sampled with probabilities proportional to their size from a list of all public high schools in Croatia. Students from each and every high school thus had an equal probability of being included, and all students present at school on the day the study took place could have participated if they were interested and had a properly signed informed consent form (e.g., minors had to have their forms cosigned by a parent or legal guardian). The final sample included 1,830 students (844 males and 986 females) from 26 schools, ranging in age from 17 to 22 years old (median age = 19). Students' response rate was very high (i.e., > 95%), and the most frequent reason for not participating involved being absent from school mainly because of acute viral diseases, such as the common cold or flu. The likelihood of participation bias influencing the results is thus very low. Additional details regarding these study procedures are reported in Šupe-Domić, Milas, Drmić Hofman, Rumora, & Martinović Klarić (2016), and a summary of the sample characteristics is presented in Table 1.

TABLE 1 Characteristics of the sample

Sample characteristics	Total (N = 1,830) Value (±SD)	Male (n = 844) Value (±SD)	Female (n = 986) Value (±SD)	Gender difference (t/χ^2)	Effect size (d/φ_c)
Demographic characteristics					
Age (years)	18.85 ± 0.50	18.87 ± 0.50	18.83 ± 0.51	p = 0.056	
School type (%)				p < 0.001	0.12
Vocational high school	53.88	60.78	47.97		
Standard high school (gymnasium)	46.12	39.22	52.03		
Living standard (%)				p < 0.001	0.10
Low	7.9	7.03	8.78		
Average	79.5	77.59	82.04		
High	12.0	15.38	9.18		
Family life					
Parents living together (%)	83.58	85.31	82.10	p = 0.066	
Number of siblings	2.49 ± 0.96	2.45 ± 0.92	2.52 ± 0.98	p = 0.137	
School achievement					
School grades (1–5)	3.87 ± 0.76	3.71 ± 0.80	4.01 ± 0.69	p < 0.001	−0.40
School behavior (%)				p < 0.001	0.19
Misconduct	4.8	7.59	2.45		
Good	17.0	22.30	12.37		
Exemplary	78.2	70.11	85.17		
Social and sexual life					
Having a best friend (%)	93.71	91.10	95.93	p < 0.001	0.10
Having a boyfriend/girlfriend (%)	40.49	34.25	45.79	p < 0.001	0.12
Number of sexual partners so far	1.20 ± 1.53	1.66 ± 1.78	0.82 ± 1.16	p < 0.001	0.57
Health					
Chronic disease (%)	12.79	10.19	15.01	p = 0.001	0.07
Frequency of physical exercise (%)				p < 0.001	0.34
Doesn't exercise at all	18.23	7.54	27.28		
Rarely, up to once a week	26.19	20.24	31.24		
Regularly, 2–3 three times a week	34.05	37.96	30.73		
Every day	21.53	34.25	10.75		
Weight-loss diet (%)				p < 0.001	0.25
Never	59.41	72.4	48.4		
Sometimes	31.02	22.1	38.6		
Often	9.57	5.5	13.0		
Alcohol consumption (%)				p < 0.001	0.26
Slight (up to several times a year)	59.40	46.14	70.73		
Moderate, up to several times a month	35.12	44.11	27.44		
Heavy, several times a week or more	5.48	9.75	1.83		
Smoking (%)				p = 0.001	0.09
Never or almost never	54.31	58.88	50.41		
Rarely (up to several times a week)	15.19	13.47	16.67		
Frequently (daily)	30.50	27.65	32.93		
Sedative consumption (%)				p < 0.001	0.13
Never or just once	91.79	94.74	89.26		
Rarely, up to several times a year	5.95	4.06	7.57		
Frequently, several times a month or more	2.26	1.19	3.17		
Drug abuse (%)				p < 0.001	0.08
Never or just once	72.25	68.38	75.56		
Several times a year or more	27.75	31.62	24.44		

2.2 | Socioeconomic status

Adolescents' SES was measured using a multidimensional approach that included self-reported information on living standard (low, average, high), average family monthly income, and possession of material goods (e.g., house/apartment, car, summer weekend house, savings, shares, life insurance, PC, internet, and electronic gadgets).

2.3 | Cultural values

Participants' emic knowledge of domains describing the good life was assessed in our prior ethnographic research (e.g., Peternel et al., 2015, 2017) and during the initial ethnographic research phase of the present study. On the basis of semi-structured interviews and free-listing, we created an inventory containing 124 items that Croatian youth associated with a good life, with items falling into seven domains: education, occupation, family, leisure, political participation, mobility, and health. Then, respondents were asked to rate the importance of each item within each domain with respect to how much it represents having a good life on a 5-point scale, from 1 (*not important*) to 5 (*extremely important*). All of the subscales had satisfactory reliability (α = 0.73–0.86, see Table S1) and were mutually intercorrelated to form one common factor, as indicated by a parallel analysis (Horn, 1965).

2.4 | Life stress

Consistent with transactional theory (Lazarus & Folkman, 1984), life stress was conceptualized as youths' subjective appraisal of problems that are relevant for one's well-being, and it was measured using the translated and culturally adopted revised version of the Problem Questionnaire (Seiffge-Krenke, 1995). This scale assesses perceptions of minor-to-moderate stressors occurring across seven life domains: school, future, parents, peers, leisure time, romantic relationships, and self. Participants indicated the stressfulness of specific problems in each domain on a 5-point scale, ranging from 1 (*not stressful at all*) to 5 (*highly stressful*). All of the subscales had high reliability (α = 0.81–0.92, see Table S2) and were mutually intercorrelated to form one common factor of stress, as indicated by a parallel analysis (Horn, 1965).

2.5 | Health behaviors

Participants' engagement in healthy and unhealthy habits was assessed by constructing a latent variable for each, based on a thorough assessment of youths' behaviors. Namely, exercise frequency was rated on a 4-point scale, from 1 (*not at all*) to 4 (*every day*); frequency of being on a weight-loss diet was rated on a 3-point scale, including 1 (*never*), 2 (*sometimes*), and 3 (*often*); frequency of eating regular healthy meals was assessed on a 5-point scale, from 1 (*never*) to 5 (*always*); frequency of alcohol consumption was assessed on a 3-point scale, including 1 (*slight—up to several times a year*), 2 (*moderate—up to several times a month*), and 3 (*heavy—several times a week or more*); smoking status was assessed on a 3-point scale, including 1 (*never or almost never*), 2 (*rarely—up to several times a week*), and 3 (*frequently—daily*); sedative consumption was assessed on a 5-point scale, from 1 (*never or just once*) to 5 (*several times a month or more*); and drug abuse history was assessed as either 1 (*never or just once*) or 2 (*several times a year or more*).

2.6 | Data analysis

Statistical analyses were performed using SPSS/PASW v.20 (IBM Corp., NY) and AMOS 20 (Arbuckle, 2011). First, zero-order correlations were calculated between the research constructs. Next, we used structural equation modelling to elucidate patterns of associations between youths' SES, social-cultural values relating to the good life, stress levels, and healthy and unhealthy behavioral habits. Based on prior research, the presumed causal model included stress as a potential mediator; consequently, we applied mediation analysis (Hayes, 2018) to test the hypothesis that life stress mediates associations between SES and social-cultural values on youths' health behaviors. Prior to testing this full model, we examined partial models comprising a single causal factor (SES or social-cultural values), mediator (life stress), and outcome (healthy or unhealthy behaviors). This approach enabled us to evaluate the presumed mediation model with each cause and outcome separately. To examine if model fit was equivalent for males and females, we used a multiple-group analysis. To evaluate the individual model fit, multiple complementary fit indices were used (Hu & Bentler, 1999; Sivo, Fan, Witta, & Willse, 2006). More specifically, we used the goodness-of-fit index (GFI), adjusted GFI, comparative fit index (CFI), and root mean square error of approximation (RMSEA), and its 90% confidence interval. Considering the sample size, a fit was considered good if (a) GFI was $\geq$0.94, (b) CFI was $\geq$0.95, and (c) RMSEA was $\leq$0.06 (Hu & Bentler, 1999; Sivo et al., 2006).

Tests of the primary study hypothesis were conducted with SES and social-cultural values conceived as causal, exogenous variables, and with stress as an endogenous variable. Healthy and unhealthy habits could be conceptualized as either the cause or consequence of changes in stress. To make the model interpretable, we present one-headed arrows in accordance with the presumed direction of influence.

3 | RESULTS

3.1 | Preliminary analyses

Descriptive information for adolescents' social-cultural values and stress levels across the seven life domains is presented in Tables S1 and S2, respectively, and the zero-order correlations for the main study variables are presented in Table 2. Intercorrelation analyses revealed that indicators of SES, social-cultural values, stress occurring across the seven life domains and youths' health behaviors were highly correlated (*r*s = 0.46–0.52 for the SES indicators, 0.37–0.66 for the social-cultural domains, and 0.40–0.75 for the stress subscales). These indicators were thus reduced to single unitary composites for analyses. As shown in Table 2, these composites representing SES, social-cultural values, and stress were weakly interrelated in males and females. Moreover, practicing unhealthy habits was largely independent of these composites (i.e., only 2 of 15 correlations were significant in the female sample and only 3 of 12 correlations

TABLE 2 Zero-order correlations for the main study variables for females (above the main diagonal) and males (below the main diagonal)

Variable	1	2	3	4	5	6	7	8	9	10
(1) Socioeconomic status composite	–	−0.12**	0.17**	0.12**	0.08*	0.04	−0.04	0.00	0.04	0.00
(2) Life stress composite	−0.07*	–	0.09**	−0.09**	−0.05	0.12**	0.06	0.04	−0.04	0.05
(3) Social-cultural values composite	0.10**	0.23**	–	0.13**	0.05	0.04	0.01	0.00	−0.07*	−0.04
(4) Healthy diet	0.11**	−0.06	0.19**	–	0.25**	−0.07*	−0.08*	−0.02	−0.12**	−0.07*
(5) Physical exercise	0.10**	−0.08*	0.10**	0.29**	–	0.07*	−0.03	−0.01	−0.19**	−0.07*
(6) Weight-loss diet	0.10**	0.12**	0.03	0.09*	0.11**	–	0.09**	0.06	0.10**	0.10**
(7) Sedatives consumption	0.09*	0.12**	−0.04	−0.05	−0.09*	0.10	–	0.11**	0.13**	0.63**
(8) Alcohol consumption	0.04	0.01	0.07	−0.03	−0.12**	−0.02	0.12**	–	0.32**	0.32**
(9) Nicotine consumption	0.04	0.04	−0.03	−0.11**	−0.20**	0.01	0.16**	0.40**	–	0.36**
(10) Drug abuse	0.05	0.08*	−0.12**	−0.05	−0.11**	0.10*	0.60**	0.26**	0.36**	–

Note. Female sample (n = 986) and male sample (n = 844).

*p < 0.05. **p < 0.01.

were significant in the male sample). Practicing healthy habits, in contrast, was weakly associated with these composites. Because healthy and unhealthy habits were largely independent of each other (i.e., median r = −0.08 for males and −0.07 for females), we treated healthy and unhealthy habits as separate latent constructs for analyses.

Preliminary mediation analyses conducted on separate variables indicated that the effects of SES and social-cultural values on healthy habits may indeed be mediated by life stress. The results were less clear for unhealthy habits as they were unrelated to SES, thus leaving only the possibility of the effects of social-cultural values on health behaviors being mediated by stress.

3.2 | Primary analyses

The results of the main structural equation modelling analyses with all variables included are summarized in Table 3, and the models are depicted in Figure 1. We first carried out a multiple-group analysis to examine the GFI of the proposed model across genders. The obtained chi-square statistic was significant, indicating that the constrained models departed from the unconstrained ones more than what would be expected by chance (obtained $\Delta\chi^2$ = 72.25, p > 0.01). Also, CFI, along with Akaike Information Criterion and Browne and Cudeck Criterion values, dropped substantially when imposing cross-group constraints, thus indicating that the hypothesized model differed for males and females.

TABLE 3 Goodness-of-fit indices of hypothetical models relating SES and social-cultural values to stress and health behaviors for female and male students

Model	χ^2	*df*	GFI	AGFI	CFI	RMSEA [90% CI]
Females (n = 986)	992.48	221	0.92	0.89	0.90	0.060 [0.056, 0.064]
Males (n = 844)	832.79	221	0.92	0.90	0.92	0.059 [0.055, 0.063]

Note. χ^2: chi-square fit statistic; *df*: degrees of freedom; GFI: goodness-of-fit index; AGFI: adjusted goodness of fit; RMSEA: root mean square error of approximation; CI: confidence interval; CFI: comparative fit index; SES: socioeconomic status.

The models for males and females demonstrated marginally acceptable fit and were generally similar except for a few differences (see below). As shown in Figure 1, higher SES was associated with less stress for both males and females, and setting higher goals to achieve a good life was associated with more stress for both males and females. In turn, greater stress was associated with exhibiting fewer *healthy* habits for males and females, and with exhibiting more *unhealthy* habits for males. Adding direct causal links between either SES or social-cultural values and health behaviors did not improve model fit. Therefore, the correlations observed between these presumed causes and outcomes are likely mediated by stress. Small, indirect effects were also significant (p < 0.05), except for unhealthy habits in females. Namely, social-cultural values had an indirect effect on healthy habits in males and females (r = 0.020 and r = −0.013, respectively), and on unhealthy habits in males (r = 0.017). Additionally, SES had an indirect effect on healthy habits in males and females (r = 0.015 and r = −0.026, respectively), and on unhealthy habits in males (r = −0.013). These gender differences are evident in Figure 1. As alluded to above, for example, greater stress was associated with unhealthy habits for males but not females. Additionally, adopting a weight-loss diet was more strongly related to unhealthy habits for females, whereas it was associated with healthy habits for males.

4 | DISCUSSION

Although an abundance of studies have examined how SES and life stress affect health behaviors and disease risk, culture is rarely taken into account, and to the best of our knowledge, very few studies have integrated all of these factors together. Considering that adolescence is a crucial period for developing healthy habits that in turn shape lifespan health, our goal with the present study was to begin to understand patterns of association between these processes in a national sample of high school seniors. Specifically, we proposed a model combining SES and social-cultural values with stress and healthy and unhealthy habits, which treated stress as a factor that may mediate associations between SES and social-cultural values, and youths' health behavior engagement. Results suggested that adolescents' SES and social-cultural values were both associated with stress levels,

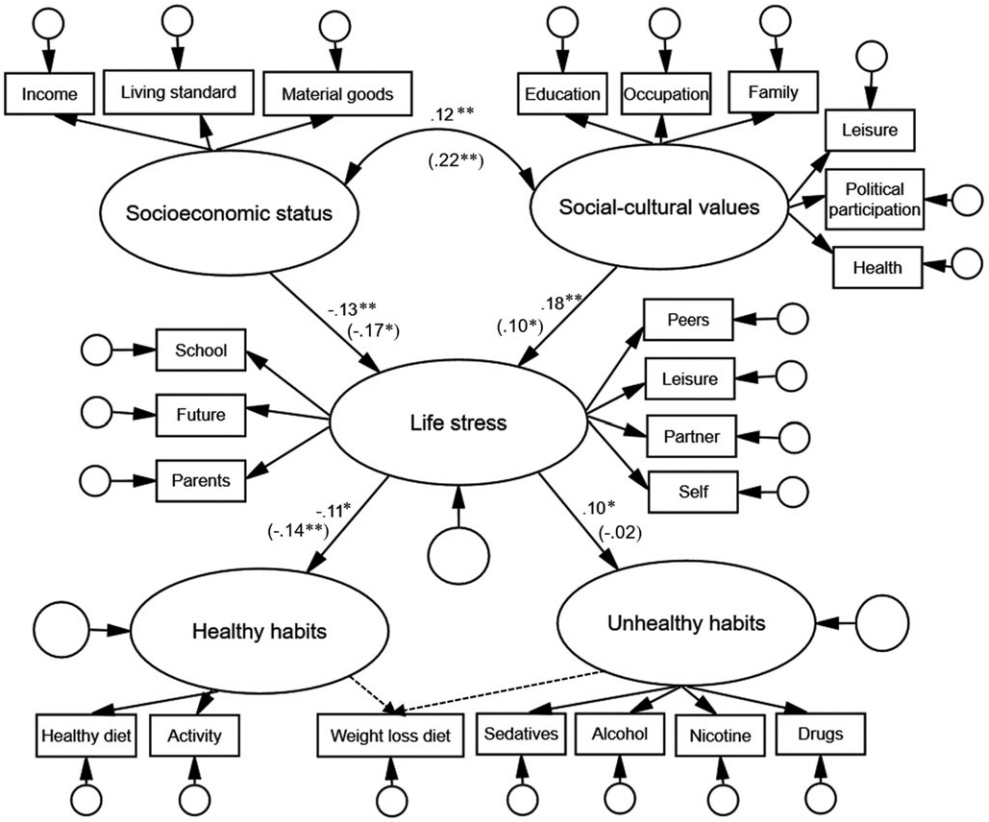

FIGURE 1 Structural equation model depicting associations between socioeconomic status, social-cultural values, stress, and health behaviors. Correlations between latent constructs and standardized path coefficients are presented, with indicators for females shown in brackets. Higher socioeconomic status was associated with less stress, whereas setting higher goals to achieve a good life was associated with more stress. In terms of gender differences, adhering to a weight-loss diet was more strongly related to unhealthy habits for females, whereas it was associated with healthy habits for males (marked with dashed lines). Additionally, stress was unrelated to unhealthy behaviors for females but was associated with exhibiting more unhealthy behaviors for males. Model fit: males, $\chi^2(221) = 832.79$, goodness-of-fit index (GFI) = 0.92, comparative fit index (CFI) = 0.92, root mean square error of approximation (RMSEA) = 0.059 (0.055–0.063); females, $\chi^2(221) = 992.48$, GFI = 0.92, CFI = 0.90, RMSEA = 0.060 (0.056–0.064). Total sample: N = 1,830; male students: n = 844; female students: n = 956; $^*p < 0.05$; $^{**}p < 0.01$

which were in turn associated with adolescents' likelihood of engaging in healthy and unhealthy behaviors. Further inspection of these associations revealed that higher SES predicted less stress, whereas setting higher goals to achieve a good life predicted more stress. In turn, more stress predicted engaging in fewer healthy habits for both males and females, and engaging in more unhealthy habits for males.

The finding that lower SES relates to higher stress is consistent with the large body of existing research on stress and health. SES is a profound determinant of health (Marmot, 2017; Wilkinson & Marmot, 2003), and lower SES has been associated with both physical (Manrique-Garcia et al., 2011) and mental health problems (Kessler & Cleary, 1980; McLeod & Kessler, 1990). It is not clear which pathways promote greater susceptibility to stress for individuals with lower SES, but it has been speculated that individuals of higher SES may have less pronounced physiologic reactivity to stress and may cope with stressors better due in part to their larger support networks and greater material resources (Matthews & Gallo, 2011; Slavich, in press).

Stress was also predicted by adolescents' social-cultural values in the present study. Interestingly, youth who set higher goals to achieve a good life reported more stress, and this association was significant for both male and female students. Therefore, greater conformity to the overarching goal of trying to achieve a good life appears to lead to more psychosocial stress in adolescents, regardless of gender.

The results linking youths' stress and health behaviors are consistent with the long-established finding that stress is associated with risky health behaviors throughout the lifespan, possibly because people tend to cope with stress by engaging in pleasurable (but unhealthy) behaviors, such as eating fatty foods, smoking, and drinking alcohol (e.g., Cartwright et al., 2003; Krueger & Chang, 2008; Ng & Jeffery, 2003; Park & Iacocca, 2014). When it comes to physical activity, some people use sports to cope with stress, but most individuals become physically inactive during times of stress (Steptoe, Wardle, Pollard, Canaan, & Davies, 1996).

Finally, the structural equation models tested indicated that stress may act as a mediator between SES, social-cultural values, and healthy and unhealthy habits in these youth. For males, stress was slightly associated with all four of these constructs, whereas for females, stress was related to three of the constructs (i.e., it did not predict unhealthy habits). Furthermore, the models indicated that favorable material status (i.e., higher SES) may act as a protective factor from stress, whereas setting higher goals to achieve a good life was associated with increased stress levels. Unhealthy habits such as smoking and consuming alcohol and sedatives are possibly a consequence of

increased stress levels insofar as some male students may use these behaviors to cope with stress. In contrast, stress was associated with engaging in fewer healthy behaviors for both males and females, suggesting that stress may reduce adolescents' likelihood of doing things that could keep them healthy, such as eating well and exercising regularly.

4.1 | Strengths and limitations

These results should be interpreted in light of several strengths. For example, we examined interrelations between several factors that are known to affect health behaviors, used an emic approach for studying the role of culture, and employed a unique nationwide sampling strategy in a country with a very high student retention rate ("early leavers" = 3.1%). However, several limitations are also noteworthy. First, the data were based exclusively on self-report, with SES being measured by student (not parent) report. The results could thus be influenced by unmeasured reporting biases or demand characteristics. Second, this was a cross-sectional study, so additional research is needed to examine how the associations described here predict changes in health behaviors over time. Third, because this study was performed in Croatia, future research is needed to examine the generalizability of the present results to other cultures. Finally, because all of the data are correlational, causation cannot be assumed.

5 | CONCLUSIONS

Notwithstanding these limitations, the present study is one of the first to combine indices of SES, social-cultural values, and stress to elucidate how these processes collectively relate to healthy and unhealthy behavioral habits in adolescence. We found that stress significantly mediated associations between adolescents' SES, social-cultural values, and healthy and unhealthy habits. Additionally, we found that whereas better SES and healthy habits predicted less stress, setting high goals to achieve a good life and engaging in unhealthy habits predicted more stress. Stress may thus represent one factor that influences adolescents' health behaviors, which may in turn have implications for their lifespan health and disease risk. At the same time, additional research is needed to extend this work to other countries and cultures, to examine the relevance of these results for longitudinal changes in health behaviors, and to elucidate biological processes that might link SES, social-cultural values, stress, and health behaviors in adolescence.

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CONFLICT OF INTEREST

The authors report no conflicts of interest with respect to this study.

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