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**RESEARCH ARTICLE**

# A Comprehensive Investigation of Associations of Objective and Subjective Socioeconomic Status with Perceived Health and Subjective Well-Being

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Socioeconomic status (SES) accounts for disparities in health and well-being. Recent studies consider the effects of individuals' subjective standing in society (i.e., subjective SES) as well as the traditional (objective) indicators of SES (i.e., income, education, occupational status), in predominantly Western samples. This study presents a comprehensive investigation of associations of objective and subjective SES with individuals' perceived health and well-being in a representative sample of young adults (aged 18–35;  $N = 3016$ ) from a non-WEIRD (Western, Educated, Industrialized, Rich and Democratic) population (i.e., Turkey), employing polynomial regressions and plotting the results onto a three-dimensional plane. Findings confirmed the value of polynomial regression to understanding the relationship of different types of SES with perceived health and well-being. For instance, while perceived overall health was descriptively greater when objective-SES exceeded subjective-SES, the reverse was the case for happiness, one indicator of well-being. Our findings also suggest an additive effect of the two types of socioeconomic status on majority of the outcome variables; individuals' perceptions of overall health, life satisfaction, happiness, and financial satisfaction were enhanced when they reported higher scores on both objective and subjective SES.

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**Keywords:** objective socioeconomic status; subjective socioeconomic status; health, well-being; non-WEIRD population

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Socioeconomic status (SES) accounts for disparities in material and psychological outcomes across the lifespan (Saegert et al., 2006). Traditionally, SES has been assessed as a combination of objective indicators, namely individuals' income, education, and occupational status (Diemer et al., 2013; White, 1982). There is a wealth of research showing that SES is associated with a wide array of health, cognitive, and psychological outcomes throughout different life stages, starting from infancy (Bradley & Corwyn, 2002) to old age (Moreno-Agostine et al., 2019). The effects of socioeconomic status on health and well-being are explained in terms of access to material and social resources. Despite a lack of consensus on how to combine the three indicators that fits best for groups with diverse socio-economic and cultural characteristics, researchers agree that income, educational level, and occupational status provide individuals with access to financial capital (material resources), human capital (non-material resources such as education), and social capital (resources achieved through social connections; see Bradley & Corwyn, 2002; Pinxten & Lievens, 2014).

Hence, individuals lacking access to such resources are more likely to have health problems (both physical and psychological) as well as social skills deficits (Elgar et al., 2013).

On the other hand, within the last decades, researchers have increasingly become interested in investigating whether subjective perceptions of one's social position played a role in their health and well-being (e.g., Adler et al., 2000; Andersson, 2015; Singh-Manoux, Adler, & Marmot, 2003). Commonly assessed as individuals' own perceptions of where they stand in the society compared to others (the MacArthur Ladder, Adler & Stewart, 2007), it has been shown in two recent meta-analyses that, subjective SES<sup>1</sup> is significantly associated with various health outcomes during adolescence (Quon & McGrath, 2014) and adulthood (Cundiff & Matthews, 2017). Adler (2009) proposed that, in determining their subjective SES, individuals are likely to consider their objective status but also factor in the value and implications of the objective SES components (i.e. the quality of the education they received) and other subtler factors (i.e. their interpersonal interactions). Hence, subjective perceptions of social status may be associated with health and well-being outcomes via psychosocial mechanisms (i.e., social comparison or relative deprivation) over and beyond the effects of material resources.

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In the current study, our aim is to provide a systematic investigation of how these two-types of assessments of individuals' socio-economic status (objective vs. subjective SES) are associated with their perceived health and well-being, the most frequently studied outcomes of social status. A related issue is that majority of the research on socio-economic status are conducted in Western societies and thus may not be applicable to other cultural and socio-economic contexts. Employing a representative sample of Turkish young adults, this study also provides an opportunity to test the basic premises of the extant literature in a non-WEIRD population (Henrich, Heine & Norenzayan, 2010).

### Effects of Socioeconomic Status on Health and Well-Being

Research has shown that objective and subjective SES are both robustly and independently associated with health outcomes, albeit through different mechanisms. Material resources grant individuals with better life conditions and a freedom of choices (Kraus, Piff & Keltner, 2009). On the other hand, those who lack these resources are likely to face harsher life conditions, live in suboptimal environments and have limited access to quality education, occupation, and health services (Kraus, 2018). These environmental conditions lead to dire effects on both physical and mental health (Adler & Ostrove, 1999). For example, research has shown higher rates of cardiovascular diseases and immunological dysfunctions (e.g. Kershaw et al., 2010; Stowe et al., 2010), higher depression (D'souza et al., 2005), and lower life satisfaction (Brooks-Gunn, Duncan & Maritato, 1997) among individuals with lower objective SES. Relatedly, need theory proposes that unfulfilled needs may drive individuals to engage in more health compromising behaviors (e.g. physical inactivity, poor nutrition, smoking; see Elgar et al., 2013) as a coping mechanism. Furthermore, the social causation hypothesis posits that extreme adverse conditions may even produce psychopathologies or activate a genetic diathesis for individuals with genetic liabilities (Wadsworth & Achenbach, 2005).

In a similar fashion, research has also confirmed the predictive power of perceived social status on various health and well-being outcomes. For example, individuals with lower subjective SES report higher rates of common cold, hypertension, cholesterol diseases, and depression (Adler & Rehkopf, 2008; Cohen et al., 2008; Demakakos et al., 2008; Ghaed & Gallo, 2007). A number of mechanisms are offered as explanations through which subjective SES influences one's health. For example, Adler (2009) points out that individuals who are lower in the hierarchy are exposed to higher levels of stress, which gradually damages their health both directly and indirectly (e.g. McEwen, 1998). Regarding psychosocial mechanisms, researchers refer to comparative and expectancy-based explanations, such as social comparison (Singh-Manoux, Adler & Marmot, 2003) and relative deprivation (Pham-Kanter, 2009). Social comparison theory posits that comparisons of resources between the self and others are a frequent and an unavoidable part of social life (Kraus, 2018). A resulting inferior

evaluation is, on the other hand, likely to induce stress and detriment psychological well-being (Anderson, Hildreth & Howland, 2015). For example, those who are stressed due to perceptions of low status in relation to immediate others are likely to engage in maladaptive health behaviors (e.g. smoking) that relieve their negative mood but lead to worse health outcomes (e.g. cardiovascular problems; see Zell, Strickhouser & Krizan, 2018).

Research on both *perceptions* of relative deprivation (e.g. Pham-Kanter, 2009) and on *actual assessments* of rank affluence relative to various reference groups such as those in schools or the larger society (e.g. Elgar et al., 2013) supported the psychosocial explanations linking subjective SES with health outcomes. Such comparative explanations take into consideration the effects of the macro contexts and propose that income inequalities in the society are likely to enhance feelings of relative deprivation and impair psychological health of those facing scarcity (Sommet, Morselli & Spini, 2018). The effects of income inequality in the society on individuals' perceptions of their personal and group-level wealth has been demonstrated with cross-sectional international data (with data from World Values Survey), longitudinal data (with data from Swiss Household Panel; see Sommet et al., 2018) and experimentally (with samples from Spain, Australia, and USA; see Sanchez-Rodriguez et al., 2019).

Recent analyses of subjective SES demonstrate that its effect on various health outcomes is independent of the effect of material wealth and suggest that perceptions of social status has incremental utility over and beyond the effects of objective indicators of social status (Adler, 2009; Kraus, 2018). For example, in a recent meta-analysis, Cundiff and Matthews (2017) showed a significant effect of subjective SES on White adults' perceived physical health after statistically adjusting for all three indicators of objective-SES. In a similar vein, cross-country comparisons yield objective SES to be a weaker predictor of health across cultures, signifying a diminished impact of objective SES indicators compared to subjective SES (Adler, 2009). Research on nonhuman species also attests to the significance of one's subjective status over objective indicators. For example, Sapolsky (2005) reported that, in a free environment with a surplus of food, baboons in subordinate positions manifested negative health outcomes. These findings indicate that the effect of subjective SES beyond that of objective indicators of SES, not only on perceived health outcomes but also on biological markers.

In addition to physical and psychological health outcomes, various well-being indicators, such as subjective well-being (SWB; Diener, 1984), life satisfaction (Haught et al., 2015), and financial satisfaction (Joo & Grable, 2004) are also linked to socio-economic status. Similarly, general life satisfaction is enhanced by economic welfare (Howell & Howell, 2008). However, observations demonstrating complex (non-linear) relationships between material wealth and subjective well-being indeed led researchers to question the adequacy of objective assessments of socio-economic status to capture variance in affective domain of SWB (see Diener et al., 2010). In fact, research

has shown that relative income (i.e., comparison of one's materials with those in the same country) explained more variance in happiness compared to income operationalized by absolute terms (Ball & Chernova, 2007). In another cross-cultural study with probability samples of Japan and the United States, Curhan et al. (2014) showed that subjective social status was a stronger predictor of well-being for participants in the U.S., whereas objective social status was a stronger predictor of well-being for participants in Japan. They explain this differential effect of the two types of socio-economic status by normative models of self and social status in these two cultures. As a culture valuing independence, participants in U.S. put greater emphasis on their own internal thoughts and feelings (hence subjective assessments of social status), whereas in a culture valuing interdependence, participants in Japan put greater emphasis on visible, agreed-upon markers of status (hence objective assessments of social status).

### **Assessment of the Two Types of Socio-Economic Status**

Overall, research is conclusive that both objective and subjective forms of social status are important predictors of health and well-being. However, there is not a definitive answer as to how these different assessments of social status are related to each other, or with the aforementioned outcomes.

Traditionally, objective SES has been assessed using composite scores measuring resource-based (e.g. income) or prestige-based (e.g. occupational prestige) indicators. Yet, comparative studies suggest complex pictures, particularly regarding the effects of income, a commonly used proxy to objective SES. For example, Diener and Biswas-Diener (2002) showed that income had a stronger effect on subjective well-being particularly on those who lived in poorer countries (e.g. Nigeria) than those living in more affluent countries (e.g. Switzerland). A number of studies have also demonstrated that income (sometimes referred to as wealth) is curvilinearly associated with health and subjective well-being (e.g. Li et al., 2016; Mackenbach et al., 2004). Similarly, Kahneman and Deaton (2010) reported a positive linear relationship between income and life evaluation (i.e. judgment) but a curvilinear effect of income on emotional well-being (i.e. feeling).

Similar to its objective counterpart, subjective SES is a complex construct. It has been introduced as an individual's cognitive averaging of standard markers of socioeconomic situation (Adler et al., 2000). However, researchers have demonstrated the effects of other determinants, such as satisfaction with standard of living (e.g. Singh-Manoux et al., 2003), socio-emotional resources (e.g. Brown et al., 2008), and past or future accomplishments and job control (e.g. Miyakawa et al., 2012) in various samples. Furthermore, individuals' evaluations of their relative standing in society may also differ depending on whom they take as their comparison group (Pettigrew, 2016).

Not only objective and subjective SES are complex constructs, but also their relationship is multifaceted. Originally, it was proposed that subjective social status would be anchored to material wealth (Adler, 2009).

However, in various samples, researchers demonstrated that individuals' evaluations of their subjective social status were not exclusively aligned with their objective social status. For example, in their meta-analysis, Cundiff & Matthews (2017) showed that subjective-SES scores were only moderately correlated with the three indicators of objective socio-economic status ( $r = 0.25, 0.33,$  and  $0.34$  for education, occupation, and income, respectively). In another recent analysis using mathematical forms, Andersson (2018) exhibited that objective and subjective SES were not associated linearly, but that their association would be best explained with a quartic form; all three objective-SES markers increased, made a plateau while approaching high scores on subjective SES and then decreased sharply. Finally, employing experimental manipulations, Sanchez-Rodriguez et al. (2019) also showed that even when their actual income was the same, individuals' evaluations of their self-perceived wealth depended on the range of income inequality they were exposed to. Those who perceived more gap between their resources and the resources of those higher on the social hierarchy judged themselves to be less wealthy and were less satisfied with their social status. In this regard, it is worth considering that the two assessments of socio-economic status may also be differently related to health and well-being.

### **The Present Study**

In the present study, we present a comprehensive investigation of associations of both objective and subjective SES with individuals' perceived health and well-being. We are particularly interested in understanding what happens if individuals' perceptions of their relative standing in the society differ from objective assessments of their socio-economic status. For example, there may be individuals whose needs are (not) fulfilled with the material resources they already attain, but they may still engage in social comparison and perceive themselves to be worse (better) than others in the social hierarchy. Considering the premises of the need theory and social comparison theory (Kraus, 2018), these two assessments will have diverse effects on individuals' health and well-being evaluations.

Hence, in this study, we examine how objective and subjective SES are associated with individuals' perceived health and well-being. Using polynomial regressions, we investigate how objective and subjective SES relate to individuals' perceived health and well-being. Accordingly, in this study, we test both linear and non-linear associations of the two types of socioeconomic status with the health and well-being outcomes.

A second overarching question we investigate concerns the generalizability of the extant findings on the effects of socio-economic status to individuals living in diverse economic and cultural conditions. As has been underscored in two recent meta-analyses linking subjective SES and health outcomes (Cundiff & Matthews, 2017; Quon & McGrath, 2014), a majority of the studies are conducted with samples from the United States, the UK, and Western Europe. Previous research with objective SES indeed suggested that traditional SES markers (income,



education, and occupational status) were not uniformly associated with various social, cognitive, and psychological outcomes in different ethnic and racial groups (Jemal et al., 2008; Williams, Priest & Anderson, 2016). In a similar fashion, Cohen, Shin, Liu, Ondish and Kraus (2017) have also demonstrated differences in the definitions of social class by members of different age and race groups. Indeed, Cundiff and Matthews (2017) hinted that subjective SES corresponded to different connotations in white and black samples, and affected health status of males and females differently. In the current study, we acknowledge such generalization issues by utilizing a representative sample of young adults in Turkey.

Turkey differs from WEIRD cultures on economic, cultural, and social characteristics. It is a non-Western (developing) country with an emerging market economy of a low GDP (\$11,114; International Monetary Fund, 2018), salient income inequality (Gini coefficient = 0.40 (ranging between 0 = complete equality and 1 = complete inequality; OECD, 2018). Despite the prevailing collectivistic culture (Hofstede, Hofstede, & Minkov, 2010), Turkey has undergone substantial urbanization process in the last half century whereby rural population decreased to 20 percent from 80 percent. Profound social changes are reflected in social class differences as well. Children of the low-income families are more likely to participate in the labor force to contribute to family budget, becoming an old-age security source for their parents when they grow up. On the other hand, the economic interdependence evolves into emotional interdependence among the higher SES individuals (Kagıtcıbası, 2017). Hence, Turkey constitutes an ideal population to test whether existing findings on effects of socioeconomic status on health and well-being prevails.

## Method

### Participants

A Turkish representative sample of youth selected with a stratified random probability based on European Union's NUTS 2 classification constituted the data for the current study.<sup>2</sup> The sample consisted of 3016 respondents (50.4% female;  $M_{\text{age}} = 26.2$ ; range: 18–35 years). Almost 18% identified themselves as belonging to an ethnic minority group. At the time of data collection, 21.6% of participants were students (52.4% female). Of those who were not in education; 3.4% were literate without a formal degree, 37.7% had secondary school degree, 35.1% had high school degree, 19.1% had an undergraduate degree, and 1.8% had postgraduate degree.

### Measures

#### Socioeconomic Status

Both objective and subjective SES were measured. *Objective SES* was assessed with traditional SES markers. *Income* was assessed as a net monthly household income from all sources (on a 1–10 scale, ranging from less than 500 TL, to more than 4501 TL, increasing with 500 TL increments;  $M = 5$ ,  $SD = 2.24$ ).<sup>3</sup> *Educational level* was assessed in terms of the highest level of education successfully completed/will complete (on a scale 1–6 scale, ranging

from basic literacy without a degree, to postgraduate degree;  $M = 3.84$ ,  $SD = 1.14$ ). To assess *job prestige*, we coded the current jobs of those employed based on The International Standard Classification of Occupations 08, with two decimals (ISCO-08; International Labour Office, 2012). Job prestige scores ranged between 0 and 86 with higher scores indicating occupations with higher prestige ( $M_{\text{employed}} = 43.08$ ,  $SD_{\text{employed}} = 26.01$ ). Objective SES was computed as a composite score by averaging the standardized scores of these three indicators. For unemployed participants, objective SES was computed only with household income and education indicators, as suggested by Adler et al. (2000).<sup>4</sup>

*Subjective-SES* was assessed with the MacArthur ladder (Adler et al., 2000). Respondents were asked to rate themselves on a 10-rung ladder representing the people in Turkey, with those at the top (bottom) of the ladder being the best (worst) off and having the most (least) education and money and best (worst) jobs. Higher scores indicated higher subjective SES ( $M = 5.43$ ,  $SD = 2.04$ ).

#### Perceived health

Three perceived health variables were measured. *Perceived overall health* was assessed by the item "Overall, how would you define your health?" on a scale from 1 (very bad) to 5 (very good;  $M = 4.16$ ,  $SD = 0.81$ ). *Perceived physical health* was assessed by the item "How often has your physical health limited you in your daily life (over the last 3 months)?" on a scale from 1 (none of the time) to 4 (all of the time;  $M = 3.46$ ,  $SD = 0.81$ ). *Perceived mental health* was assessed by the item "How often have you felt down and that nothing could cheer you up (over the last 3 months)?" on a scale from 1 (none of the time) to 4 (all of the time;  $M = 3.16$ ,  $SD = 0.82$ ). Both perceived physical and mental health were reverse-coded prior to analyses, with higher scores suggesting better health.

#### Well-being

Three well-being variables were measured. *Life satisfaction* was assessed by the item "How often have you been completely satisfied with your life (over the last 3 months)?" on a scale from 1 (none of the time) to 4 (all of the time;  $M = 2.79$ ,  $SD = 0.83$ ). *Happiness* was assessed by the item "Considering your life, how happy would you say you are?" on a scale from 1 (very bad) to 10 (very good;  $M = 6.59$ ,  $SD = 2.54$ ). *Financial satisfaction* was assessed by the item "Thinking about your own financial situation, how satisfied are you right now?" on a scale from 1 (very dissatisfied) to 4 (very satisfied;  $M = 2.43$ ,  $SD = 0.92$ ).

## Results

To explore our research questions, we conducted polynomial regressions, and plotted the polynomial model using the RSA package<sup>5</sup> (Schönbrodt, 2017). Polynomial regression allows for a test of non-linear relations as well as linear ones. Plotting it onto a three-dimensional surface allows us to investigate how the two predictors relate to the outcome in different ways. Accordingly, we ran six models by regressing each outcome variable on the linear terms, the quadratic terms, and the interaction term of objective and subjective SES.

We had low multicollinearity low between the predictors (VIF < 2, Humberg et al., 2019). Objective and subjective SES scores were standardized. No data exclusion was made for any of the variables. As we used secondary data, we were not able to conduct priori power analysis. Yet, a sensitivity power analysis using G\*Power 3.1 (Faul et al., 2009) with five predictors for polynomial regression (i.e. R<sup>2</sup> going from two to five predictors) indicated we had 80% power at  $\alpha = 0.05$  to detect an effect size as small as  $f^2 = 0.003$  (i.e.,  $R^2 = 0.003$ ).

**Effects of objective SES and subjective SES on health and well-being outcomes**

**Table 1** presents the correlations among the variables. The indicators of objective SES moderately correlated with subjective SES. Objective SES positively correlated with all health variables. Subjective SES, on the other hand, only correlated with perceived overall health and perceived mental health, but not with physical health. All three well-being indicators were moderately correlated with both objective and subjective SES. The correlation between objective and subjective SES is  $r = 0.33$ , similar to the correlations reported in the literature (e.g. Adler et al., 2000).

**Table 2** presents the polynomial regression coefficients (i.e. the linear terms for both SES types,  $b_1$  and  $b_3$ ; their interaction term,  $b_4$ ; and their respective squared terms,  $b_2$  and  $b_5$ ). **Figure 1** exhibits the polynomial regression models on three-dimensional surface.<sup>6</sup>

To start with the health outcomes, the findings show that *perceived overall health* increased as both types of socio-economic status increased. This pattern can be visually observed from **Figure 1A**. For instance, scores on overall health was higher when both types of socioeconomic status were around their mean levels than when both of them were below mean levels. Moreover, overall health was around its highest levels when scores on objective SES exceeded those on subjective SES and vice versa (Also see **Figure 1A** for a visual inspection). For example, the predicted value of perceived overall health is around 4.32 for someone who scores approximately 1 standard deviation

above the mean on objective SES and who scores around the mean on subjective SES; whereas, the predicted value of perceived overall health is around 4.23 for someone with the opposite pattern. For *perceived physical health*, there was a positive linear main effect of objective SES ( $b_1 = 0.06$ ), controlling for the effect of subjective SES. As can be visually inspected from **Figure 1B**, the association of subjective SES with perceived physical health does not significantly differ across the levels of objective SES. For *perceived mental health*, we observed a positive linear effect of objective SES ( $b_1 = 0.16$ ) and a curvilinear effect of subjective SES (NS  $b_2$  and  $b_5 = -0.04$ ) forming an inverse U-shape, accounting for the effect of subjective SES. Perceived mental health increased as individuals' objective SES also increased. However, even though perceptions of mental health increased as one's evaluations of subjective SES increased, this increase was not linear, and after reaching a plateau, perceptions of mental health started decreasing (See **Figure 1C**).

As for the well-being outcomes, both *life satisfaction* and *financial satisfaction* were at the highest level when both types of socio-economic status were high and were at the lowest level when both SES types were low (although this is a descriptive result, See **Figure 1D** and **1F** for visual inspections). For example, scores on life satisfaction and financial satisfaction were higher when both types of socioeconomic status were around their mean levels than when both of them were below mean levels. For *happiness*, on the other hand, we observed a similar pattern as perceived overall health. The findings suggest that happiness increased as both types of socio-economic status increased. In addition, happiness was descriptively higher when individuals' subjective SES exceeded their objective SES than vice-versa (see **Figure 1E**). For instance, the predicted value of happiness is around 7.12 for someone who scores approximately 1 standard deviation above the mean on objective SES and who scores around the mean on subjective SES, whereas the predicted value of happiness is around 7.2 for someone with the opposite pattern (also see **Figure 1E**).

**Table 1:** Correlations among study variables.

|                            | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. Income                  | 1       |         |         |         |         |         |         |         |         |         |
| 2. Education               | 0.33*** | 1       |         |         |         |         |         |         |         |         |
| 3. Job Prestige            | 0.27*** | 0.40*** | 1       |         |         |         |         |         |         |         |
| 4. Objective SES           | 0.77*** | 0.82*** | 0.77*** | 1       |         |         |         |         |         |         |
| 5. Subjective SES          | 0.29*** | 0.26*** | 0.20*** | 0.33*** | 1       |         |         |         |         |         |
| 6. Overall health          | 0.19*** | 0.11*** | 0.05    | 0.18*** | 0.12*** | 1       |         |         |         |         |
| 7. Physical health         | 0.11*** | 0.04*   | 0.01    | 0.08*** | -0.01   | 0.30*** | 1       |         |         |         |
| 8. Mental health           | 0.22*** | 0.05**  | 0.01    | 0.15*** | 0.04*   | 0.21*** | 0.44*** | 1       |         |         |
| 9. Life satisfaction       | 0.25*** | 0.10*** | 0.03    | 0.19*** | 0.22*** | 0.23*** | 0.01    | 0.18*** | 1       |         |
| 10. Happiness              | 0.20*** | 0.13*** | 0.06*   | 0.17*** | 0.28*** | 0.13*** | 0.04*   | 0.14*** | 0.25*** | 1       |
| 11. Financial satisfaction | 0.40*** | 0.18*** | 0.11**  | 0.31*** | 0.36*** | 0.18*** | 0.03    | 0.20*** | 0.29*** | 0.33*** |

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table 2:** Polynomial Regression Coefficients for Objective-SES and Subjective-SES Predicting Health and Well-Being Outcomes.

|                         | $b_0$                          | $b_1$                          | $b_2$                          | $b_3$                  | $b_4$                        | $b_5$                             | $R^2$           |
|-------------------------|--------------------------------|--------------------------------|--------------------------------|------------------------|------------------------------|-----------------------------------|-----------------|
|                         |                                | $B_{O-SES}$                    | $B_{S-SES}$                    | $B_{O-SES}^2$          | $B_{Interaction}$            | $B_{S-SES}^2$                     |                 |
| <i>Perceived Health</i> |                                |                                |                                |                        |                              |                                   |                 |
| Overall health          | <b>4.19***</b><br>[4.15, 4.23] | <b>0.14***</b><br>[0.10, .18]  | <b>0.06***</b><br>[0.03, 0.10] | -0.01<br>[-0.05, 0.03] | 0.02<br>[-0.03, 0.06]        | -0.02<br>[-0.05, 0.00]            | <b>0.037***</b> |
| Physical health         | <b>3.48***</b><br>[3.44, 3.52] | <b>.09***</b><br>[0.05, 0.13]  | -0.03<br>[-0.06, 0.00]         | -0.02<br>[-0.06, 0.02] | 0.01<br>[-0.03, 0.05]        | -0.01<br>[-0.03, 0.02]            | <b>0.008***</b> |
| Mental health           | <b>3.21***</b><br>[3.17, 3.25] | <b>0.14***</b><br>[0.10, 0.18] | -0.01<br>[-0.04, 0.03]         | -0.01<br>[-0.04, .03]  | -0.02<br>[-0.06, 0.03]       | <b>-0.04**</b><br>[-0.07, -0.02]  | <b>0.027***</b> |
| <i>Well-Being</i>       |                                |                                |                                |                        |                              |                                   |                 |
| Life satisfaction       | <b>2.78***</b><br>[2.74, 2.83] | <b>0.13***</b><br>[0.09, 0.17] | <b>0.15***</b><br>[0.12, 0.18] | 0.01<br>[-0.03, 0.05]  | <b>0.04*</b><br>[0.00, 0.08] | -0.01<br>[-0.04, 0.01]            | <b>0.063***</b> |
| Happiness               | <b>6.82***</b><br>[6.69, 6.94] | <b>0.27***</b><br>[0.15, 0.38] | <b>0.60***</b><br>[0.49, 0.71] | 0.03<br>[-0.09, 0.15]  | -0.06<br>[-0.20, 0.08]       | <b>-0.22***</b><br>[-0.31, -0.14] | <b>0.103***</b> |
| Financial satisfaction  | <b>2.48***</b><br>[2.43, 2.52] | <b>0.24***</b><br>[0.20, 0.28] | <b>0.26***</b><br>[0.22, 0.29] | 0.02<br>[-0.02, 0.07]  | -0.03<br>[-0.07, 0.02]       | <b>-0.05***</b><br>[-0.07, -0.02] | <b>0.176***</b> |

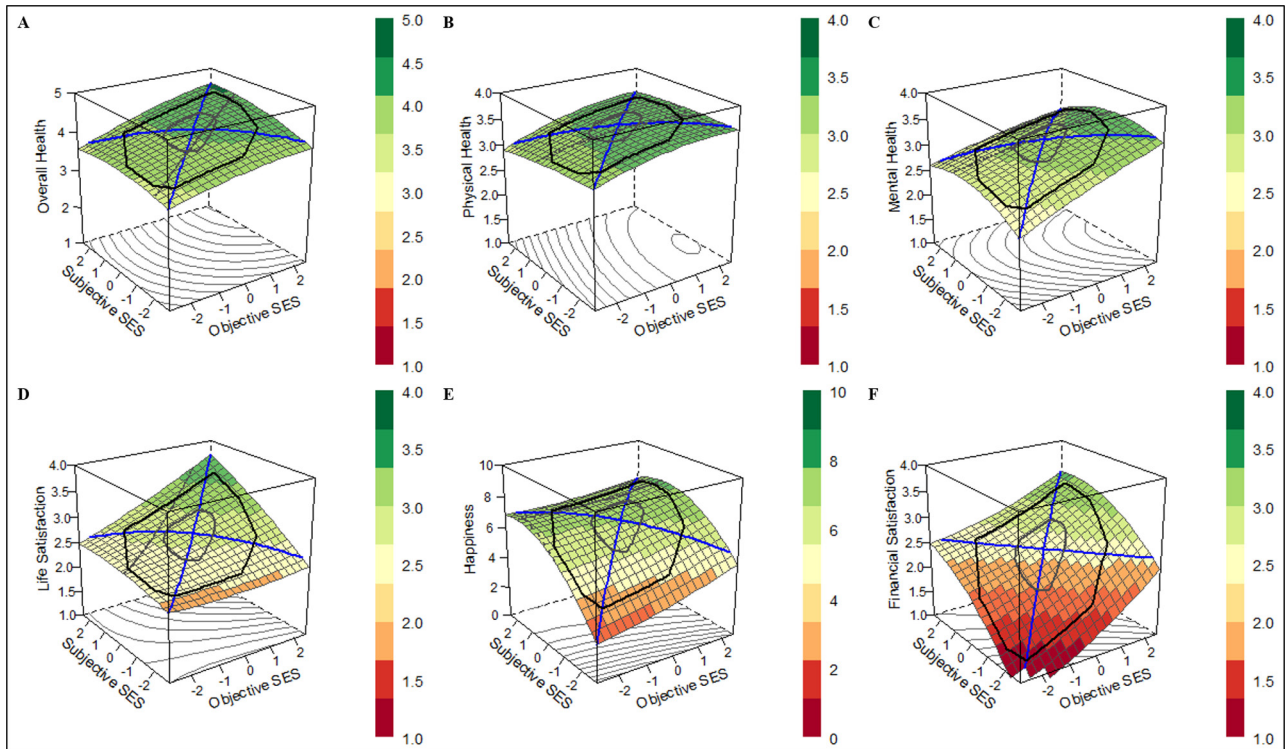
Notes: Unstandardized beta weights are reported.

O-SES = Objective-SES; S-SES = Subjective-SES.

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

See the supplementary materials (i.e., osf.io/wucrp) for exact p-values.

The equation for each model is as follows:  $\hat{Y} = B_0 + B_1 \text{Objective-SES} + B_2 \text{Subjective-SES} + B_3 \text{Objective-SES}^2 + B_4 \text{Objective-SES} * \text{Subjective-SES} + B_5 \text{Subjective-SES}^2$ .



**Figure 1:** Plots for the polynomial models.

*Note:* X-axis shows objective SES, y-axis shows subjective SES, z-axis shows specific outcome variables. The bag plots, as displayed on the surfaces, indicate the location, spread, correlation, skewness, and tails of the data. The area inside the larger area contains the half of the observations, and the rest are located in the region between the inner and outer bag.

### Discussion

The present study explored how objective and subjective SES relate to individuals' perceived health and well-being, in a representative sample of young adults in Turkey. Our findings suggested that, for majority of the outcomes, objective and subjective SES have an additive effect. Individuals' perceptions of overall health, life satisfaction, happiness, and financial satisfaction are enhanced when they reported higher scores on both types of socio-economic status. Our findings also suggest that, for some outcome variables, the discrepancy between the two assessments of socio-economic status matter; in the current sample, overall health was descriptively greater when their objective SES exceeded their subjective SES whereas happiness was descriptively greater when their subjective SES exceeded their objective SES.

These findings, in general confirmed the value of a nuanced analytical approach to understanding the relationship of different types of socioeconomic status with various psychological variables. Our approach differs from extant literature on the psychological effects of socio-economic status in several ways. First, while most research investigates linear and independent effects of objective and subjective SES, the analyses we conducted allowed us to test the presence of both non-linear and relative effects of these two SES types. Second, our sample is composed of young adults living in a non-Western, developing country that bears cultural, social, and economic differences from which a majority of research on SES has been conducted. Third, the outcomes we included covered a range of

health and well-being variables; those that are frequently, yet independently tested in previous research. We discuss the implications of these points below.

In the current sample, the correlation between objective and subjective-SES was almost identical to those reported in studies with predominantly Western samples (Cundiff & Matthews, 2017). This finding may indicate that the relationship between objective and subjective SES is similar across cultures, despite the differences in economic conditions people live in and the social and cultural characteristics of their society. Adler (2009) has proposed that individuals' perceptions of their status in the social hierarchy would basically reflect an interpretation of their "material wealth" with some subtler factors such as their interpersonal interactions. The moderate correlation ( $r \sim 0.30$ ) between the two assessments of objective and subjective SES indeed confirm this suggestion; perception of social status is not irrelevant of objective markers of socio-economic status but does not completely map them either. On the other hand, there is also possibility that this correlation (which turns out to be significant in the samples in extant studies) might be an artifact of the way subjective SES is operationalized. Studies assessing individuals' perceptions of social status commonly ask them to identify their place on the social hierarchy based on the education, income, and occupational status of those in the higher and lower ends of the hierarchy. Hence, this operationalization itself anchors subjective-SES assessment to the markers of objective SES. However, research with various cultural groups (e.g. Cohen et al.,



2017) proposes that self-definitions of social class may change across time and between groups. There are also other studies that show that objective indicators only moderately predict subjective SES (Andersson, 2015 and 2018). Hence, more systematic research investigating the possibility of determinants beyond objective markers of socioeconomic status, particularly for groups with diverse socio-economic conditions is warranted.

Correlations of both types of SES with health and well-being variables were also comparable with the extant literature (e.g., Anderson et al., 2012; Haught et al., 2015). However, the lack of an association of physical health with subjective SES was especially striking considering strong associations reported in past research (Cundiff & Matthews, 2017). One possible reason for this finding might be related to the macro-conditions of the context the current sample is living. In a society with high income inequality, access to health might be more directly dependent on actual material resources than individuals' relative evaluations. The same finding is also observed in the polynomial regression analysis. Among all the outcome variables, only perceived physical health was linearly and significantly related to objective SES but not subjective SES. On the other hand, the polynomial regression analysis proposes the reverse effect for perceived mental health; it is significantly and curvilinearly related to subjective SES but not to objective SES. Mental health, as operationalized in the current study refers to "feeling down at a level that nothing could cheer you up". In a collectivistic culture like Turkey where social ties are important, the aspect of subjective SES that is independent of the material wealth (such as interpersonal interactions, as proposed by Adler, 2009) might be more relevant for assessments of mental health. The curvilinearity of this association might further suggest that those in the lower end and the higher end of the social hierarchy have diverse material concerns and social support systems to deal with these concerns. Coupled together, these findings imply that objective and subjective SES are differently associated with specific health outcomes.

The findings of our study indicating the additive effects of the two types of socio-economic status is important. The analyses (except for perceptions of physical and mental health) suggested that general health and all well-being outcomes tend to enhance for individuals with *both* higher objective and subjective SES. This finding indicates an additive effect of types of SES suggesting and should be considered in studies investigating the relative effects of objective and subjective SES.

One other important finding that somewhat complements the findings suggesting main effects of objective SES for physical health and subjective SES for mental health is that respondents reported better "overall" health when their objective SES exceeded their subjective SES but reported being "happier" when their subjective SES exceeded their objective SES. Even though this was a descriptive pattern, considering the cultural characteristics of the Turkish society characterized by collectivistic culture, developing economy, and Islam, it is possible whatever the respondents use as cues for evaluations of their social status while engaging in social comparison,

they may also be using those aspects of their lives as an indication of their overall happiness. In addition to their value in showing differences in the predictive power of the two types of socio-economic status, this diverse effect may also suggest that both the material resources and social comparison accounts for effects of socio-economic status are valid – but for different outcomes (Kraus, 2018). However, we acknowledge that our findings might be specific to the current sample and propose that the generalizability of our findings should be further tested in samples with different social and economic backgrounds.

Our study has a few limitations. The large-scale and multinational nature of the original study from which the sample was derived required us to use single items for most dependent variables (See Tosun et al., 2018). However, these items are frequently used to measure similar constructs in well-established studies such as the European Values Survey and European Social Survey (<https://europeanvaluesstudy.eu>; <https://www.european-socialsurvey.org>). Yet, it is possible that these assessments might have increased Type 1 error in our results. Also, again due to the nature of the original study, we did not have objective measures for health variables. Even though we used assessments that are commonly used in the literature, using objective assessments of health would have strengthened our findings. Finally, given that we worked with cross-sectional data, we were not able to draw causal conclusions between SES types and outcomes. Future studies should consider potential reversed directions.

In conclusion, we propose that researchers should be wary of the mutual and diverse effects of objective and subjective SES on various psychological outcomes. This would require first a more systematic investigation of what subjective SES means in diverse cultures; whether or not individuals in diverse socio-economic conditions and cultural backgrounds unvaryingly base evaluations of their subjective status in the social hierarchy to economic indicators, and secondly studies that systematically test the independent and additive effects of different assessments of socioeconomic status, also considering what the outcomes they measure entail.

## Notes

- <sup>1</sup> To avoid conceptual confusions, the present study uses the term objective SES to refer to the combination of traditional indicators of SES (i.e., income, education, occupation), differentiating it from subjective-SES that denotes how one sees themselves relative to others in society.
- <sup>2</sup> NUTS (Nomenclature of Territorial Units for Statistics) is a three-level classification system for dividing up the economic territory of the European Union. NUTS 2 divides the EU countries into basic socio-economic regions and is the most widely used classification for comparative purposes. See <https://ec.europa.eu/eurostat/web/nuts/background> for a detailed description.

Data for this study were collected as part of a larger study with 11 countries conducted in 2016 (see Tosun et al., 2018). Subjective SES was only assessed in the Turkish sample, within the general data set of CUPESE



Project. We utilized all related variables in the Turkish data, with no omissions.

<sup>3</sup> One US dollar at the time of data collection (i.e., 2016) was equal to 3.02 Turkish Liras (TL). Minimum wage was about 1650 TL; 546 US dollars.

<sup>4</sup> We dummy-coded employment status and entered this into the models. It did not have any effect on the findings.

<sup>5</sup> Data and R script are available at OSF repository (<https://osf.io/wucrp/>).

<sup>6</sup> X-axis shows objective SES, y-axis shows subjective SES, z-axis shows specific outcome variables. The bag plots, as displayed on the surfaces, indicate the location, spread, correlation, skewness, and tails of the data (Rousseeuw, Ruts & Tukey, 1999), analogous to boxplots. The area inside the larger bag contains the half of the observations, and the rest are located in the region between the inner and outer bag.

### Additional File

The additional file for this article can be found as follows:

- **Data file.** Dataset for the study. DOI: <https://doi.org/10.5334/irsp.364.s1>

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### Competing Interests

The authors have no competing interests to declare.

### Author Contribution

Murat Kezer and Zeynep Cemalcilar contributed equally to the work.

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