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Subjective Social Status and Ambulatory Blood Pressure Among African American Emerging Adults

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ABSTRACT. Subjective perceptions of social status (SSS) are associated with health. However, the literature on the associations between various indicators of SSS and blood pressure specifically is mixed. We sought to shed light on this mixed literature by examining differential associations between SSS ratings with different social group reference points and ambulatory blood pressure (ABP). We hypothesized that lower SSS ratings would be associated with higher ABP and that these associations would be stronger for those having lower income. A sample of 155 African American emerging adults (72% women) participated in lab visits and ABP monitoring for 2 to 4 days. The MacArthur Scale was used to measure SSS with respect to community (SSS-Community) and the United States population (SSS-US). Average daytime ABP was calculated. Regressions controlling for covariates found that lower SSS-US was associated with higher systolic and diastolic ABP, $b^* = -.17$, $p = .043$ and $b^* = -.20$, $p = .048$, but SSS-Community was not. Income moderated the associations between SSS-US ($p = .025$) and SSS-Community ($p = .003$) and diastolic ABP, with SSS being significantly associated with diastolic ABP in those with moderate (SSS-US: $b^* = -.23$) or high income (SSS-US: $b^* = -.39$; SSS-Community: $b^* = -.33$). These findings extend the literature on associations between SSS and ABP by demonstrating that, among African American emerging adults, SSS is more strongly associated with ABP among those with higher incomes. Future research should explore biopsychosocial implications of having relatively high income paired with lower SSS.

Keywords: ambulatory blood pressure; community; subjective social status

Diversity badge earned for conducting research focusing on aspects of diversity.

Previous literature has examined the mental and physical health implications of subjective social status (SSS), which is an individual's perception of their social ranking within a particular social group (Davis, 1956). The preponderance of the empirical work in this area suggests that SSS can influence health and well-being to a similar extent as, and independent of, objective socioeconomic status (SES) indicators like income and education (Singh-Manoux et al., 2005; Zell et al., 2018). SSS self-perceptions are social-cognitive factors that impact mental and physical health through several pathways. Studies have found that harsher SSS self-perceptions (i.e., rating oneself as having a lower status within a group) are associated with higher psychological stress and distress and fewer health-promoting lifestyle behaviors (Robinson et al., 2020; Steen et al., 2020). SSS self-perceptions may induce stress, distress, and unhealthy behaviors because they

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create a sense of social evaluative threat (i.e., if one believes that the overwhelming majority of a large social group is more socially valued than one's self, they may feel vulnerable or threatened by that population or that their identity or self-esteem is threatened; Cardel et al., 2020; Dickerson et al., 2004). Social evaluative threat inevitably leads to stress and negative emotions (Dickerson et al., 2004; Dickerson et al., 2009), both of which are associated with negative health outcomes like elevated blood pressure as well as unhealthy behaviors that might influence health parameters like blood pressure (Cundiff et al., 2016; Joseph et al., 2021).

SSS has been assessed with respect to several different referent groups. Specifically, an individual may have perceptions regarding their social standing within their school (SSS-School), community (SSS-Community), or country (e.g., SSS-US). It is possible that the group to which one is comparing themself determines the nature and influence of that comparison (Zell et al., 2018). For example, comparing oneself to others in one's community, however community may be defined, would be considered comparing oneself to a proximal referent (i.e., a member of a community encountered in daily life, either through direct contact or through cultural identification). It is possible that, due to more frequent direct contact or very strong social or cultural identification, proximal referents, such as neighbors or others in ones' ethnic group, are more salient to the individual than distant referents such as everyone in the country. The greater salience of these proximal comparisons may make them more impactful on an individual's emotion and behaviors, and, therefore, their health (Wolff et al., 2009).

Interestingly, a meta-analysis by Zell and colleagues (Zell et al., 2018), which considered samples of diverse SES compositions, found that SSS-US and SSS-Community had remarkably similar impacts on physical health outcomes. One of the studies included in the meta-analysis examined the associations between SSS and clinic blood pressure, which is blood pressure assessed within a healthcare office or laboratory. Specifically, that study found that lower SSS-US was associated with lower clinic BP and SSS-Community was unrelated to clinic BP in a sample of women across diverse SES backgrounds (Ghaed & Gallo, 2007). Another similar study was conducted prior to the meta-analysis but not included in the meta-analysis. That study found that lower SSS-US was associated with higher likelihood of clinic blood pressure elevation, especially among middle-aged adults from a wide range of SES backgrounds (Manuck et al., 2010).

Since the meta-analysis, several empirical studies have examined SSS-US and SSS-Community with respect to their associations with blood pressure. Two of these studies found that SSS-US was not associated with clinic blood pressure when examining African Americans of diverse SES (Cardel et al., 2020) and when examining community college students from multiple racial backgrounds (Harbison et al., 2019). One study examining late emerging adults of diverse SES (McClain et al., 2022) found that lower SSS-US was only associated with higher clinic systolic blood pressure in Asian American women and higher diastolic blood pressure in African American males. The one study that also examined SSS-Community found that it was not associated with clinic blood pressure (Cardel et al., 2020). The literature examining associations between SSS-US and SSS-Community and clinic blood pressure is therefore somewhat mixed, with one study finding that lower SSS-US was associated with higher clinic blood pressure (Manuck et al., 2010), one study finding similarly finding associations in the intuitive directions but only in specific sub-groups (McClain et al., 2022), some studies finding no associations (Cardel et al., 2020; Harbison et al., 2019), and one study finding counterintuitive associations, lower SSS-US associated with lower clinic blood pressure (Ghaed & Gallo, 2007).

Although several studies have examined SSS and clinic blood pressure, it is important to determine whether SSS is associated with ambulatory blood pressure (ABP; blood pressure assessed using portable equipment worn as a participant engages with their everyday activities), for a number of reasons. First, ABP better reflects the physiological influences of daily life experiences than clinic BP (Kamarck et al., 2002) and some aspects of daily life are heavily influenced by SSS (Russell & Odgers, 2020). Clinic blood pressure may be less sensitive to these SSS differences. Further, ABP better predicts clinical cardiovascular outcomes than clinic blood pressure (Hansen et al., 2006; Kamarck et al., 2002). Only one recent study examined the association between SSS and ABP (Neubert et al., 2022). Using one day of ABP monitoring, Neubert and colleagues (2022) found that neither SSS-Community nor SSS-US was associated with mean daytime ABP in a German sample of 53 healthy adults in young and middle adulthood, including students and non-students with jobs of different levels of occupational prestige. Over a decade prior to this study, using two days of ABP monitoring, Ghaed and Gallo (2007) found that higher SSS-Community was associated with lower daytime ABP, but that higher SSS-US was associated with higher daytime ABP in a sample of 92 middle-aged, married, employed white women of various income levels, in addition to the clinic blood pressure findings from the same study. Therefore, the results of studies comparing SSS-Community and SSS-US in associating with ABP are also mixed.

It is possible that the mixed nature of this literature is due to associations between SSS ratings and ABP being moderated by other factors, such as objective SES factors. Although some of the previous studies examined whether the association was moderated by gender, ethnicity, or age, none of the previous studies have examined whether the associations are moderated by objective SES itself. Objective SES and SSS are not the same constructs and capture multidimensional, qualitatively different experiences, as demonstrated by studies showing weak correlations between objective SES and SSS (Martin-Storey et al., 2018; Zell et al., 2018). Weak correlations support the possibility that someone with above average objective SES may rate themselves as below average on SSS. Nevertheless, the resources associated with above average objective SES (e.g., social capital, access to services, positive and privileged treatment from others, positive emotion boosts from receipt of financial or occupational rewards, perceived control over stress, healthy behavioral patterns; Gallo et al., 2009) might mitigate the social evaluative threat, distress, perceived vulnerability, and self-esteem threats that accompany lower than average SSS, thereby mitigating the association between SSS and blood pressure. Thus, simply controlling for objective SES does not capture how objective resources of money and education influence the extent to which SSS influences ABP. In other words, previous studies have examined whether SSS is associated with ABP independent of objective SES whereas we seek to explore whether the association between SSS and ABP depends on one's objective SES. The meta-analytic finding that associations between both forms of SSS and various health outcomes are stronger in lower objective SES samples suggests that this may be true for ABP as well (Zell et al., 2018).

Further, none of the aforementioned studies examining associations between SSS-US, SSS-Community, and ABP had adequate representation of emerging adults or ethnic minority populations like African Americans. It is important to test these associations in African Americans given the complex dynamics between ethnic minority status and SSS, racial/ethnic differences in SSS that suggest that African American young adults have lower SSS than most other racial/ethnic groups, and racial/ethnic blood pressure disparities that suggest that African Americans are at higher risk for higher blood pressure (McClain et al., 2022). Further, a meta-analysis found that SSS was more highly and positively correlated with actual education and income in European Americans than in African Americans (Cundiff et al., 2017). This meta-analysis also found that SSS was more highly and negatively associated with physical health in African Americans compared to European Americans although different meta-analyses found that lower SSS was less highly associated with hypertension and other cardiovascular disease risk factors and health outcomes in ethnic minority samples (Tang et al., 2016; Zell et al., 2018). Additionally, a recent study found a weaker negative association between SSS and clinic blood pressure in African American males compared to European American males (McClain et al., 2022). Again, a study examining SSS and ABP within a heterogenous African American sample is warranted given this mixed set of background findings.

It is important to test these associations in emerging adults given the complex dynamics of SES and social perception that occur during this developmental phase, with many individuals' SSS changing from high to low (or vice versa) as they move from adolescence to emerging adulthood depending on whether or not they are still in school and whether circumstances are prompting them to make more realistic SSS appraisals (Goodman et al., 2015). Further,emerging adults' SSS perceptions seem to have different from the SSS perceptions of adolescents and older adults. Overall, it appears that younger samples like children and adolescents sometimes show smaller associations between SSS and health than older adults (Zell et al., 2018), however, emerging adulthood may be a particularly important time in SSS development. Partly due to social media and partly due to long established developmental patterns, there is a heightened prevalence and influence of social comparison, social class awareness, and identity evaluation in emerging adulthood (Noon et al., 2023; Thomas & Azmitia, 2014). However, little research explores SSS and ABP among emerging adults.

The current study is the first to compare associations between SSS-US, SSS-Community, and ABP in a sample of African American emerging adults across the objective SES spectrum as moderated by objective SES. Further, the mixed nature of the previous literature regarding SSS rankings and ABP suggests that the association between these two variables is moderated by other factors, with general meta-analytic findings suggesting that objective SES may be one such moderator (Zell et al., 2018). Thus, we hypothesized that more negative SSS perceptions (rating oneself lower either with respect to one's community or country), would be associated with higher ABP in African American emerging adults, and that these associations would be stronger for those that experience the additional adversity of lower objective SES. We anticipated that these effects would emerge independent of standard demographic (e.g., gender, objective income), health (e.g., BMI), and putative psychosocial (e.g., perceived stress) controls.

Method

Participants

The sample consisted of 155 African American emerging adults (M_{age} = 24.7, *SD* = 3.3, 72% women). Participants had no previous history of cardiovascular disease and no major mental or physical health diagnoses.

Procedure

Study procedures were approved by our institutional review board (IRB) prior to data collection. Participants were recruited through various online and print methods, including flyers placed in public spaces, social media posts, and Craigslist. Flyers were posted at community locations, such as churches, recreation centers, and coffee shops in Southern California. Social media posts were created as videos, flyers, and reels on Facebook, Instagram, and TikTok. Participants were also recruited through word of mouth.

Participants were screened over the phone and during their first lab visit. They were screened for previous history of cardiovascular disease, mental health diagnoses, and various living situations, such as working overnight, that could potentially present as confounding variables. Further, anyone younger than 18 or older than 30 was excluded from participating. Informed consent was obtained: researchers explained the study and the minimal risks associated with it and participants were allowed to read the consent form and ask questions.

When arriving in the lab, participants were greeted by two researchers. As part of this comprehensive ecological momentary assessment (EMA) and ABP study, the participants completed an extensive set of questionnaires and had their blood pressure measured according to best practices outlined by the American Heart Association Council on High Blood Pressure Research (Pickering et al., 2005). They then completed the monitoring period over a five-day period consisting of two 2-day ambulatory blood pressure monitoring days and one rest day in the middle. The participants then returned to the lab to complete another set of questionnaires and debriefing. Participants were all compensated for their participation. Those that completed the full protocol, including at least 80% compliance with the EMA and ABP monitoring, were compensated $165. Participants that did not complete the full study received compensation according to the portions that they did complete.

Measures

Demographics

Participants self-reported their age, gender, years of education, and household income, including any financial support from parents and other family members.

Biological and Psychosocial Covariates

Body mass index (BMI) was assessed using height and weight measured at the first laboratory appointment ($lbs/inches^2 \times 703$). Clinic blood pressure was assessed using the average of two readings taken at the first laboratory appointment using the standard recommended protocol (Pickering et al., 2005). Participants with clinically elevated blood pressure at the first laboratory visit were informed of this elevation, provided with recommendations for following up with a provider, and excluded from further participation. Perceived stress was assessed using total score on the perceived stress scale (PSS; Cohen et al., 1983), which is a 14-item questionnaire querying the extent to which, in the past year, a participant perceived that life's circumstances were stressful, i.e., overwhelming, difficult to control, or difficult to cope with. Response options on this scale ranged from 1 (*never*) to 5 (*very often*). This scale has internal consistency and test-retest reliability as well as good construct validity (Cohen et al., 1983; Örücü et al., 2009). In the current sample, Cronbach's alpha was .76. Negative emotion was assessed using total score on the negative emotion subscale of the Positive and Negative Affect Scale (PANAS; Watson & Clark, 1999), which is a 10-item subscale querying the extent to which, in the past week, a participant felt a number of negative emotions (e.g., "afraid", "ashamed", "irritable", "upset"). Response options on this scale ranged from 1 (*very slightly or not at all*) to 5 (*extremely*). This scale has shown good reliability and validity (Felt et al., 1999). In the current sample, Cronbach's alpha was .82.

Subjective Social Status

The MacArthur Scale of Subjective Social Status was used to assess SSS (Alder et al., 2000; Alder & Stewart, 2007). This scale consists of a 10-rung ladder and instructions to place an X on the ladder rung that corresponds to where the person perceives themself to stand within a particular social group. They are further told that standing on this ladder is based on education, income, and occupational prestige. Higher placement of the X indicates higher perceived social ranking relative to those in the social group being referenced. SSS-US was assessed by instructing participants to compare themself to all individuals in the United States. SSS-Community was assessed by instructing participants to compare themselves to others in their "community." Participants were allowed to define for themselves what that community or social group was for them. The MacArthur Scale of SSS has shown construct validity, including appropriate convergent and discriminant validity relative to measures of objective social status, and acceptable test-retest reliability (Cundiff et al., 2013; Giatti et al., 2012).

Ambulatory Blood Pressure

ABP was assessed using the Oscar 2 monitor (Suntech Medical). Each participant was trained to use the Oscar and practiced wearing it prior to the start of the monitoring period. Participants wore the Oscar monitor for either two days or four days, i.e., two sets of two-day periods with a one-day break in between[1]. The Oscar monitors were programmed to take readings hourly. Average ABP was calculated for each participant by calculating a mean of their blood pressure readings taken during their waking hours.

[1]Average ABP did not differ between participants following the two-day protocol and those following the four-day protocol. Average ABP also did not differ between the two separate two-day periods of those following the four-day protocol.

TABLE 1

Sample Descriptives (*N* = 155)

	Count	Percentage
Gender		
Women	111	71.6
Men	44	28.4
Yearly Household Income		
Less than $20,000	31	20.0
Between $20,000 and $40,000	60	38.7
Between $40,000 and $75,000	43	27.8
More than $75,000	21	13.5
	M	*SD*
Age	24.7	3.3
Subjective Social Status (possible range of 1–10)		
U.S.	5.0	1.7
Community	5.7	1.9
Ambulatory Blood Pressure (in millimeters of mercury)		
Systolic	129.1	13.2
Diastolic	73.8	7.1

TABLE 2

Bivariate Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. SSS U.S.									
2. SSS Community	.55***								
3. Household Income	.31***	.15							
4. Body Mass Index	-.14	-.04	-.01						
5. Perceived Stress	-.26**	-.16*	-.17*	-.01					
6. Negative Emotion	-.15	-.10	-.16*	-.03	.38***				
7. Systolic Clinic BP	-.04	-.01	-.01	.38**	-.18*	.00			
8. Diastolic Clinic BP	-.05	-.06	-.10	.21**	-.05	.01	.44***		
9. Systolic ABP	-.22**	-.03	-.01	.19**	-.17*	-.07	.39**	.30**	
10. Diastolic ABP	-.18*	-.09	.04	.13	-.12	-.13	.68***	.43**	.67***

Note. ABP = ambulatory blood pressure, SSS = subjective social status. * $p < .05$. ** $p < .01$. *** $p < .001$.

Statistical Analyses

We first conducted bivariate correlations between primary study variables and potential covariates. In addition to standard assessment of bivariate associations, these correlations were also used to determine which potential psychosocial covariates (perceived stress or negative emotion) to enter as a covariate given the likely high correlation and overlap between perceived stress and negative emotion. Although either could potentially play a role in the association between SSS and ABP, we decided a priori to only enter the one that was most strongly correlated with SSS and ABP to avoid multicollinearity. We next conducted three multiple linear regression steps for each SSS indicator and each ABP outcome. At each step, all a priori determined hypothesized variables and covariates were entered simultaneously. The first step included the main effect of the respective SSS indicator and ABP indicator controlling for age, gender, and household income. The next step included the main effect of the respective SSS indicator and ABP indicator controlling for age, gender, household income, BMI, and the psychosocial indicator selected based on bivariate correlations. The final step included the main effect of the respective SSS indicator and ABP indicator controlling for age, gender, household income, BMI, and the psychosocial indicator selected based on bivariate correlations and an interaction term between the respective SSS indicator and income with both variables centered prior to creation of the interaction term. Significant interactions were probed with follow up simple slopes and Johnson–Neyman regions of significance moderation analyses conducted in PROCESS v4.2 (Model 1, 95% confidence intervals, 5000 bootstrap samples).

Results

Participants ranked themselves on average around the fifth rung of the SSS-US (M = 5.0) (i.e., participants saw themselves as close to average in social ranking relative to others in the US) and rankings fell within two rungs of the fifth rung (SD = 1.7). Additionally, on the SSS-Community, participants had a similar response, ranking on average around the sixth rung (M = 5.7) and falling within two rungs of this average (SD = 1.9). Systolic ABP averaged approximately 130 millimeters of mercury (mmHg; SD = 13.2). Diastolic ABP averaged approximately 74 mmHg (SD = 7.1). Please see Table 1 for a full description of the study sample.

SSS-US and SSS-Community were highly correlated

(Spearman's rho = .55, $p < .001$). SSS-US was positively correlated with household income (Spearman's rho = .31, $p < .001$) whereas SSS-CM was not (Spearman's rho = .15, $p = .05$). Household income (i.e., objective SES) was not associated with ABP, $ps > .51$. SSS-US was associated with both systolic ABP (Spearman's rho = -.22, $p = .007$) and diastolic ABP (Spearman's rho = -.18, $p = .029$) whereas SSS-Community was not associated with either ABP measure, $ps > .24$. For potential psychosocial covariates, perceived stress was negatively correlated with SSS-US (Spearman's rho = -.26, $p < .001$) and SSS-Community (Spearman's rho = -.16, $p = .04$) as well as systolic ABP (Spearman's rho = -.17, $p = .04$) whereas negative emotion was associated with neither indicators of SSS nor BP, $ps > .06$; therefore, primary analyses only controlled for perceived stress. Further, clinic blood pressure was not associated with either SSS indicator, $ps > .49$. Please see Table 2 for bivariate correlations between all primary variables and covariates.

Primary Results

Systolic ABP

Regressions controlling for age, gender, household income, BMI, and perceived stress found that lower SSS-US was associated with higher systolic ABP, $b^* = -.17$, $p = .043$, partial $\eta^2 = .025$, but SSS-Community was not, $p = .83$. Income did not moderate the association between either SSS indicator and systolic ABP ($ps > .16$). BMI and perceived stress did not emerge as significant predictors in any of the multiple regression models, $ps > .13$.

Diastolic ABP

Regressions controlling for age, gender, household income, BMI, and perceived stress found that lower SSS-US was associated with higher diastolic ABP, $b^* = -.20$, $p = .048$, partial $\eta^2 = .023$, but SSS-Community was not, $p = .69$. Income moderated the associations between SSS-US and diastolic ABP and SSS-Community and diastolic ABP, $F(1, 149) = 5.14$, $p = .025$, adjusted $R^2_{change} = .03$ and $F(1, 149) = 9.42$, $p = .003$, adjusted $R^2_{change} = .06$, respectively. Simple slopes analyses found that SSS-US was only significantly associated with diastolic ABP in those with moderate and high household income, $b^* = -.23$, $p = .01$ and $b^* = -.39$, $p = .001$, respectively and SSS-Community was only significantly associated with diastolic ABP in those with high household income, $b^* = -.33$, $p = .002$. These associations were in the intuitive direction, i.e., higher SSS was associated with lower ABP. Johnson–Neyman regions of significance results showed that the top 68.42% of household income scores significantly moderated the effect of SSS-US on diastolic ABP and the top 41.51% of household income scores significantly moderated the effect of SSS-Community on diastolic ABP. Please see Figure 1 for an illustration of the significant SSS-Community X Household Income interaction. BMI and perceived stress did not emerge as significant predictors in any of the multiple regression models, $ps > .27$. Please see Table 3 for regression results at each analytic step[2].

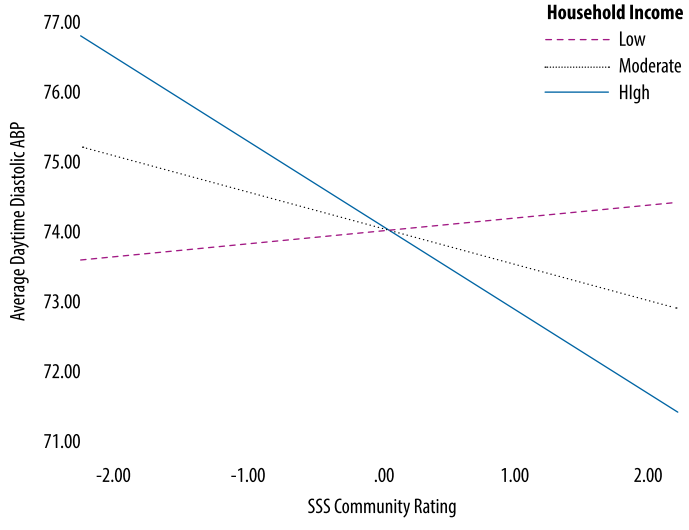
Discussion

In the first ABP study to test an objective SES moderating factor on the association between SSS and ABP, the findings of this study demonstrate that SSS-US and SSS-Community are more highly associated with diastolic ABP in those with higher objective SES in a sample of African American emerging adults. Among those with high household income, higher SSS-US and higher SSS-Community are associated with lower diastolic ABP. Specifically, in these groups, for every rung an individual rated themself lower on the SSS-US scale, diastolic ABP was 1-2 millimeters of mercury higher. Small to moderate effect sizes found are comparable to those found between other biopsychosocial factors and blood pressure (Euteneuer et al., 2019; Joseph et al., 2016). These results shed light on the mixed findings in the literature. Previous ABP studies of this association were relatively underpowered to test interactions and did not conceptualize any moderated associations.

[2] Results are functionally the same when controlling for years of education instead of household income. Years of education and income were not controlled in simultaneous regressions in order to avoid multicollinearity.

FIGURE 1

Subjective and Objective Social Status Associations With Diastolic Blood Pressure



Note. ABP = ambulatory blood pressure, SSS = subjective social status.

Patterns of interactions in the current study suggest that moderate to high-income, low SSS individuals have worse diastolic ABP levels compared to moderate to high-income, high SSS individuals. Inherent in this pattern is that high-income individuals were not as protected from the negative sequela of low SSS as theory would have suggested and as we hypothesized. It is possible that some emerging adults with high objective SES rated themselves as having lower than average SSS due to pessimism or cognitive vulnerabilities that make them more prone to negative perceptions, both of which are underlying traits associated with higher blood pressure (Felt et al., 2023). Emerging adults from high income families may also have more pressure to achieve success and higher standards by which to subjectively compare themselves (Mahatmya & Smith, 2017), all of which could increase blood pressure. It is also possible that, although objective SES in emerging adults is still heavily influenced by family SES, emerging adults are conceptualizing their personal SSS without respect to their family's standing. The fact that household income and SSS were not strongly correlated in this sample supports this notion. Additionally, a longitudinal study of participants as they aged from adolescence through emerging adulthood demonstrated that African Americans and those who are no longer enrolled in school were more likely to move from high SSS reporting to low SSS reporting through this time period and that those whose SSS decreased in this way were more likely to exhibit higher BMI, even compared to those with consistently low SSS and especially among African Americans (Goodman et al., 2015). This very compelling pattern of developmental findings points to one additional possible explanation for why African American emerging adults with moderate to high household income were still impacted when they reported lower SSS and those with low household income were not as impacted by SSS.

The unmoderated association between SSS-US and systolic ABP contrasts with the previous ABP literature, suggesting either no association between SSS-US and ABP (Neubert et al., 2022) or a counterintuitive association of lower SSS-US being associated with lower ABP (Ghaed & Gallo, 2007). Differential results could be due to the different age, gender, and race/ethnicity compositions of these previous samples. The current study is the first to examine associations between SSS-US and ABP in a sample of African American emerging adults across the SES spectrum. Saban et al. (2019) found that SSS-US was associated with resilience and perceptions of social support in older African American adults, which could possibly explain the findings in this African American sample. It is also possible that emerging adults in this group, as they strive to find their place in the social sphere, are striving towards success as defined in social media or other national arenas, and therefore, relative to older samples, become more distressed by adverse social comparisons to those across the country (or even the globe), which could possibly explain the findings in this emerging adult sample.

It is interesting that lower SSS-US was directly associated with higher systolic ABP despite household income (objective indicator of SES) not being directly associated with systolic ABP. It is possible that stigmatized racial/ethnic groups and emerging adults weigh things other than income and education more heavily in assessing their SSS, including psychological resilience, support from those around them, interpersonal interactions, counterfactual thinking ("if only I had…"), and

TABLE 3

Multiple Linear Regression Results

	Systolic ABP			Diastolic ABP		
	Demographic Adjusted Main Effects Model	Fully Adjusted Main Effects (demographics, BMI, perceived stress covariates)	Fully Adjusted Model + Interaction	Demographic Adjusted Main Effects Model	Fully Adjusted Main Effects Model (demographics, BMI, perceived stress covariates)	Fully Adjusted Model + Interaction
SSS-U.S.	$b = -1.15$ (.54)*	$b = -1.31$ (.64)*	$b = -1.60$ (.70)*	$b = -0.84$ (.41)*	$b = -0.92$ (.46)*	$b = -0.97$ (.36)
Income	$b = 0.18$ (.54)	$b = 0.10$ (.45)	$b = -0.01$ (.34)	$b = 0.36$ (.22)	$b = 0.33$ (.23)	$b = 0.15$ (.18)
SSS-U.S. *Income			$b = -0.22$ (.17)			$b = -0.20$ (.09)*
SSS-Community	$b = 0.13$ (.68)	$b = 0.15$ (.69)	$b = -0.53$ (.54)	$b = -0.14$ (.35)	$b = -0.14$ (.36)	$b = -0.55$ (.28)
Income	$b = -0.15$ (.41)	$b = -0.17$ (.41)	$b = -0.25$ (.32)	$b = 0.12$ (.21)	$b = 0.11$ (.21)	$b = -0.01$ (.16)
SSS-C *Income			$b = -0.19$ (.14)			$b = -0.21$ (.07)***

Note. ABP = ambulatory blood pressure, SSS = subjective social status. * $p < .05$. ** $p < .01$. *** $p < .001$.

anticipated opportunities in the future (Euteneuer et al., 2019; Martin-Storey et al., 2018; Saban et al., 2019). So, systolic ABP findings suggest that the rich, additional life experiences captured by SSS may more directly influence ABP than objective amounts of money.

Some strengths of this study include the joint exploration of SSS-US and SSS-Community together with ABP as well as examining a previously understudied population and objective SES as a moderator. The focus on a specific population in regards to both scales allows for further specification within the literature of SSS, which has been not only mixed but had limited generalizability to the current population under study. This study was robust in many ways, filled gaps in the literature, and considers ABP, a robust measurement with strong correlations to health risks including stroke and mortality. Further, we utilized 2 and 4 days of ABP monitoring whereas the two other studies on this topic used 1 or 2 days of monitoring (Ghaed & Gallo, 2007; Neubert et al., 2022).

Implications

Better understanding the complex health-related influences of different versions of SSS in African American emerging adults has important implications for clinical intervention. For example, if SSS-US and SSS-Community truly are more impactful for the health of African American emerging adults with moderate or higher household income, it would be important that behavioral health interventions target these very specific perceptions and the appraisals that influence these impressions in those with moderate to high household income. Our study, when interpreted alongside experimental studies demonstrating that those led to perceive themselves as being of higher social ranking exhibit lower clinic blood pressure than those led to perceive themselves as being of lower social ranking (Cundiff et al., 2016), suggests that social status perceptions are modifiable and a potential concept for health intervention. Social status perceptions may be modified by changing or expanding the social reference points to which individuals compare themselves, helping individuals reappraise whether comparison is even helpful, and helping individuals to use comparison in an aspirational way that is more healthy and less threatening. Further, given that our findings were uncovered within emerging adults, college curriculum developers and college counseling and health centers might consider addressing these modifiable social comparisons and perceptions within the college setting.

Further, this study will hopefully lead to diversification in research regarding SSS, including comparing differential implications in different subgroups such as those in different countries and people of different occupations for example. It would be fascinating to observe how SSS, both US and Community, continue to compare and contrast against each other in studies including other health correlates. Thematic studies of associations between values, community identification, feelings of belongingness, and associations with health and SSS could also shed light on themes of social comparison and sociocultural impacts on self-perception and health. The current study found that SSS-US was more strongly associated with household income than SSS-Community, which aligns with meta-analytic findings (Zell et al., 2018).

Limitations

The study is not without limitations. A limitation for this study is that we recruited participants as a convenience sample, and therefore the study is less generalizable to the general emerging adult population, which would impact our external validity. For example, the sample was composed of substantially more women than men. It is possible that the associations found in this sample would be more or less strong in women alone or men alone, but this possibility is something that needs to be empirically tested. Additionally, we were not able to control for all possible confounding variables, such as depression and anxiety, but we did exclude those who were experiencing clinically significant or diagnosed mental illnesses from participating. Lastly, the data collected was cross sectional in nature, and no direct manipulation or experimentation was performed. Although it is logical to assume that it is more likely for SES and SSS to influence ABP than ABP influence them, we cannot infer causal relationships between SSS, income, and BP.

Future Directions

To our knowledge, there is no other literature investigating these exact relationships among SSS, income, and ABP among other racial/ethnic groups. Considering the nuanced implications for comparisons among many distinct cultures and racial groupings, further research should investigate how health outcomes are affected by different definitions of community and dynamic cultures, contexts and pressures placed on various groups. The mixed findings in the literature regarding SSS thus far seem to suggest that the dynamics of SSS and identity are incredibly nuanced, as different demographic groups in different nations with different definitions of community may produce mixed results. Therefore, it is of great importance to consider each population within its present context to maximize understanding of the health and functioning of the diverse individuals

and rich communities across multiple cultural settings. No cultural setting or distinctive community should go unconsidered or under-researched, as it is especially shown in the mixed SSS literature that community definitions and impacts on health cannot be generalized.

Further, there is room to establish an even more comprehensive picture of cardiovascular activity in relation to SSS by examining other outcomes such as heart rate variability.

Concluding Remarks

Despite limitations, this article is a strong contribution to the literature. The current study clarifies and extends the literature on associations between SSS and ABP by demonstrating for the first time that, among African American emerging adults, both SSS-US and SSS-Community are more strongly associated with diastolic ABP in those with higher household incomes and that SSS-US is associated with systolic ABP. Future research should explore additional nuances in these relationships, including in-depth examinations of the biopsychosocial implications of having relatively high income but rating one's self as somewhat lower on social status. The way human beings see themselves in the world clearly has implications for the functioning of their bodies. There is much left to examine, and this is a very important area of research as self-perceptions color every second of life.

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