PREDICTORS OF PERCEIVED SCARCITY: THE IMPACT OF DEMOGRAPHIC FACTORS, OBJECTIVE SOCIOECONOMIC STATUS, AND SUBJECTIVE SOCIAL STATUS

by

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ABSTRACT

CODY MORGAN DILLON-OWENS. Predictors of Perceived Scarcity: The Impact of Demographic Factors, Objective Socioeconomic Status, and Subjective Social Status. (Under the direction of DR. AMY H. PETERMAN)

Perceived scarcity is a relatively new construct conceptualized to be a subjective indicator of perceived resource availability that captures factors previously unaccounted for by traditional, objective indicators of socioeconomic status (SES). Like the Subjective Social Status Scale (SSS), the Perceived Scarcity Scale (PScS) is a subjective measure that has been shown to account for unique variance when predicting health outcomes, as compared to measures such as income and education. Despite scarcity's linkages to SES and health outcomes, little is known about perceived scarcity's relationships with individual difference characteristics. The current study furthers the development of this measure by using multiple regression/correlation analyses to examine the demographic and objective SES factors influencing perceived scarcity and explore how perceived scarcity is related to SSS. Findings indicate that age, income, and proximal SSS are important predictors of scarcity across different types of samples. Mixed findings regarding race, gender, education, and distal SSS indicate the need for further research and exploration of moderated models. These results begin to elaborate how perceived scarcity is situated within the nomological network of SES indicators and clarify construct distinctiveness.

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LIST OF ABBREVIATIONS

SES	Socioeconomic Status
SSS	Subjective Social Status
PScS	Perceived Scarcity Scale
CSDH	Commission on Social Determinants of Health
SRH	Self-rated Health
MTurk	Amazon's Mechanical Turk
UNCC	University of North Carolina at Charlotte
SPSS	Statistical Package for the Social Sciences
MENA	Middle Eastern/North African
NS	Not Statistically Significant

CHAPTER 1: INTRODUCTION

Decades of research have illustrated the profound impact that socioeconomic status (SES) can have on an individual's health, well-being, (Adler & Stewart, 2010; Alvarado & Chi, 2016; Gray, 1982; Marmot, 2005) and even mindset (Griskevicius et al., 2013; Manstead, 2018). Individual SES is a key social determinant that has been shown to affect physical health (Bachmann et al., 2003; Chen et al., 2006; Roberge et al., 1995), mental health (Gallo & Matthews, 2003; Kingston, 2013; Lorant et al., 2003; Mani et al., 2013), and perceptions of self-rated health (Alvarado & Chi, 2016; Farmer & Ferraro, 2005; Senn et al., 2014) across the lifespan (Adler & Stewart, 2010; Alvarado & Chi, 2016; Matthews & Gallo, 2011; Wiltshire et al., 2009) even when controlling for health practices (Kino & Kawachi, 2020). SES has been measured in a myriad of ways but measures often include some combination or composite of household income, education, wealth, employment status, and occupation (Matthews & Gallo, 2011; Oakes and Rossi, 2003; Shavers, 2007). Broadly, it is a construct that is thought to represent the objective resources at one's disposal in relation to their society (Phelan et al., 2010). Work by Adler and Stewart (2010), the World Health Organization (e.g. the Commission on Social Determinants of Health [CSDH] framework, 2010), and others have created frameworks to elucidate the relationships between SES and other social determinants and explain exactly how SES impacts health (Adler & Rehkopf, 2008; Adler & Stewart, 2010; Kristenson et al., 2004; Solar & Irwin, 2010; Taylor & Repetti, 1997). Ultimately, SES serves as a snapshot of one's position in society and SES itself is also situated within a larger sociopolitical context (Phelan et al., 2010; Taylor & Repetti, 1997). Thus, it is important to recognize the context of an individual when considering SES.

One's SES is positioned within, and affected by, the larger socioeconomic and political environment of the country where one lives. This environment includes structural determinants such as governance, public policy, social policy, discriminatory practices, and culture all of which intersect with individual factors, such as race, ethnicity, immigration status, and other individual social determinants (Adler & Stewart, 2010; Arpey et al., 2017; Solar & Irwin, 2010; Taylor & Repetti, 1997). Further, SES interacts with one's local context, such as the quality of neighborhoods and the opportunities available, to affect outcomes (Adler & Rehkopf, 2008; Lee et al., 2007; Marmot, 2005). The confluence of these determinants interacts with SES to determine one's social position. The intersecting combinations of these determinants affect a person's day-to-day living conditions, the circumstances of their situation, the behaviors they engage in, and their social milieu which all ultimately affect health outcomes. A representation of these systems can be seen in Solar and Irwin's (2010) model in Figure 1. This figure displays the cyclical and cascading nature of determinants and biopsychosocial factors.

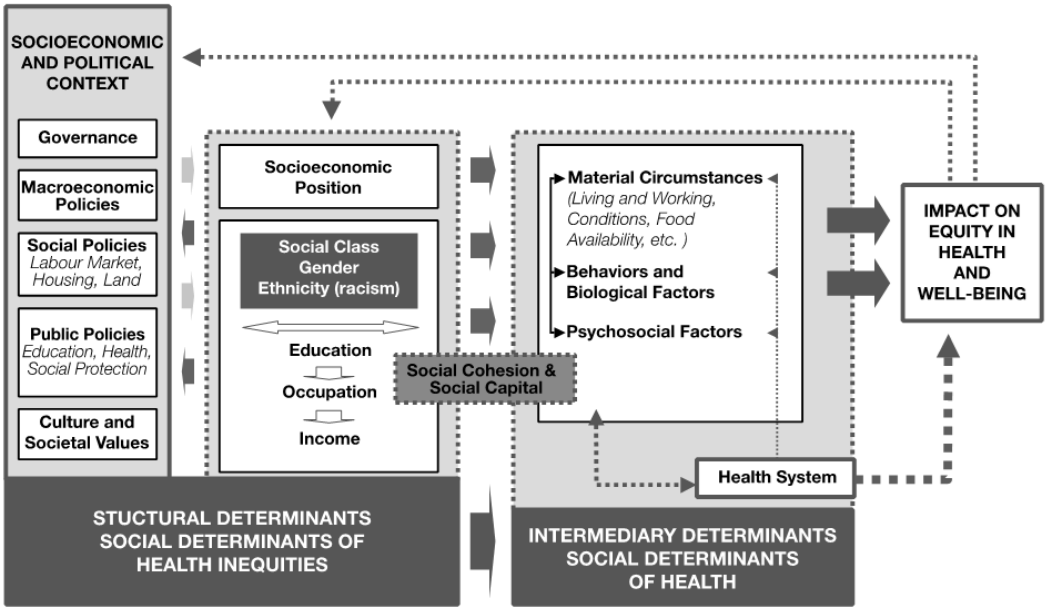

Figure 1. Model for how SES can affect health via intermediary determinants (Solar & Irwin, 2010).

To provide a poignant example, the United States bears a long and ongoing history of discriminatory practices that have oppressed and disenfranchised specific groups (Kendi, 2016). These practices have had longstanding economic impacts on marginalized groups (Williams et al., 2016) which have directly and indirectly affected their health and well-being (Alvarado & Chi, 2016; Brown et al., 2016; Greenwald et al., 1996; Williams & Collins, 1995), in addition to the negative health effects of discrimination itself (Williams & Mohammed, 2009). For example, racist policies leading to housing segregation can affect pollutant exposure as well as residential and commercial value in an area (Williams et al., 2016; Williams & Collins, 2001). This leads to not only a lack of economic opportunity, but poor educational quality since public schools are funded by property taxes (Williams & Collins, 2001). These factors stifle both economic and social mobility which can affect everything from health to crime for the residents of this area. The current literature base provides strong evidence for the disproportionate and inequitable distribution of resources among racial groups (Williams et al., 2016) which is rooted in a history of racist policies.

While objective SES measures (i.e., common quantitative/rank-order measures such as income and education) have provided extremely useful information, they clearly provide only one piece of the puzzle in the larger context of individual health. SES and other structural and social determinants affect health through more intermediate determinants such as living conditions, stress, health related behaviors, and social-environmental factors, that are in part a consequence of SES (and other overarching factors) (Adler & Snibbe, 2003; Arpey et al., 2017; Kristenson et al., 2004; Senn et al., 2014; Solar & Irwin, 2010). This consequential, 'lived experience' of the individual is not measured by objective SES measures. It is not necessarily the household income that affects health, but how that household income interacts with the context

of that particular person's life (e.g. their identity, debt ratio, number of children) to affect their immediate living conditions and health behaviors. Intermediary determinants can be thought of as measures of the experienced consequences of structural determinants. As Figure 1 shows, the impact intermediary determinants impart on a person's health also has a cyclical impact within their own life (i.e. affecting position and circumstances) and society (e.g. an impacted individual and research participant).

Subjective Social Status

Taking a more context-oriented approach to socioeconomic position has prompted consideration about alternative measures that could better capture a person's perceived experience of these intertwining relationships, rather than deducing it using quantitative measures of SES. While research in the field initially looked at SES using these "objective" measures such as income and education, there has been recent interest in looking at socioeconomic position through a more *subjective* lens using measures such as the Subjective Social Status scale (SSS) (Adler et al., 2000). The SSS scale was designed to capture an individual's sense of their perceived social status; in essence, their sense of their SES in relation to others in their immediate and national context (Adler & Stewart, 2007). It is proposed that an individual's perceived position within the social hierarchy accounts for multiple dimensions of socioeconomic status and reports their synthesized interpretation of how they compare to others with regards to these indicators (Lundberg & Kristenson, 2008). The SSS has been shown to be a unique predictor of several health outcomes even when accounting for objective SES indicators for both adults (Adler et al., 2000; Brown-Iannuzzi et al., 2014; Cohen et al., 2008; Cundiff & Matthews, 2017; Operario et al., 2004; Ostrove et al., 2000; Präg et al., 2016; Singh-Manoux et al., 2003; Zell et al., 2018) and adolescents (Quon & McGrath, 2014). Further, SSS has been

found to mediate the relationship between individual SES and certain health outcomes (Brown-Iannuzzi et al., 2014; Demakakos et al., 2008). Thus, SSS serves as a complementary measure to SES indicators by providing a sense of an individual's perceived positioning within a larger hierarchy.

While this measure has sparked a new direction for the field, it feels limited by focus its on social comparison (Callan et al., 2015). It gives a sense of one's situation in the context of others around them, but still does not measure intermediary determinants of health. It measures perceived overall position but does not directly tap into a person's perceived day-to-day experience of their conditions and situation. A comprehensive, subjective measure covering intermediary determinants of health could further elucidate our understanding of health pathways by providing a convenient measure of a person's felt circumstances given their structural determinants. This provides the opportunity for researchers to study both how structural determinants subjectively impact an individual's lived experience, and further explore how subjective experiences impact health. Perceived scarcity represents a potential new measure to address these gaps.

1.1 Perceived Scarcity

The construct of perceived scarcity, or the perceived experience of not having enough resources to meet one's needs or in the quantity desired, is proposed to complement the use of both objective SES indicators and the SSS by providing a measure of subjective resources, or an individual's resources in context (rather than objective resources divorced of context or overall subjective status as compared to known others). Perceived scarcity seeks to directly assess participants' internalized, self-perceived socioeconomic situation by measuring their experiences across multiple domains (material scarcity, time scarcity, and psychosocial resource scarcity,

described below) (DeSousa et al., 2018). Put simply, perceived scarcity is the feeling that one does not have enough resources to meet one's needs or demands (DeSousa et al., 2018; Mullainathan & Shafir, 2013). The original work by Mullainathan and Shafir (2013) primarily examined scarcity of material resources and time. Later qualitative exploration of perceived scarcity confirmed the significance of these two domains, and added a third, psychosocial resources (DeSousa et al., 2018). Material scarcity is the perception of not having enough material resources (e.g. money, food, goods), either to meet one's necessities or in the quantity that is desired. Time scarcity is the perception of not having enough time to complete tasks that must be done or that one would like to accomplish. Psychosocial resource scarcity is the perception of not having enough interpersonal resources (e.g. social support) or intrapersonal resources (e.g. self-efficacy, cognitive ability) to meet one's needs or not having them at desired levels. This perceived mismatch between resources and demands is conceptualized to be a subjective internalization which is influenced by the interaction of income and other resources with one's social context. This internalized mismatch results in an overall sense or feeling of "not having enough", i.e., an overall perceived sense of scarcity.

However, since scarcity is the culmination of experiences across multiple broad domains, it is not simply those considered impoverished who can experience scarcity (Shah et al., 2012). Indeed, perceived scarcity may represent an absolute lack of resources (e.g. material deprivation) and/or having less than someone wants or in the quantity desired. As such, even individuals with relatively greater objective resources can report scarcity if they still have less than they perceive they need or desire. For example, people of higher SES may still experience time scarcity, which can have effects on their behavior. Experiencing scarcity in any particular domain can affect cognition, leading to the impairment of executive functioning with greater attentional focus

being given to problems of scarcity (Bickel et al., 2014; Mani et al., 2013; Shah et al., 2012). This attentional shift due to cognitive burden can sometimes lead to the neglect of other problems a person is facing, and the worsening of long-term outcomes (Shah et al., 2012).

Each domain of perceived scarcity is also related to health outcomes and captures a component of the demands that individuals face. Material scarcity can take into account factors of household wealth and debt that objective indicators do not capture (e.g. how does the individual experience their wealth and debt ratio?) (Heflin & Iceland, 2009). Experiencing a lack of material resources is associated with lower self-rated health (SRH), increased depression, and may represent the lack of access to healthcare (Heflin & Iceland, 2009; Tucker-Seeley et al., 2013). Time scarcity has been found to affect health behaviors and is related to poorer SRH and higher levels of depression (Jabs & Devine, 2006; Roxburgh, 2012; Zuzanek, 2004). Additionally, the lack of psychosocial resources, both inter- (e.g. social support) and intrapersonal (e.g. self-efficacy), has been suggested as a mediator between SES and health by interfering with an individual's ability to effectively appraise and manage stress (Gallo et al., 2009). Taken together, perceived scarcity represents a measure that both provides a quick, subjective 'pulse' on an individual's intermediary determinants of health and examines how the quantity of resources present manifest themselves in the individual's life (DeSousa et al., 2018; DeSousa et al., 2020). Thus, perceived scarcity represents a valuable construct worthy of further development.

Indeed, not only is the study of perceived scarcity particularly insightful on its own but it provides an excellent complement alongside SSS and traditional SES measures. For example, traditional measures of SES such as income, education, wealth, and employment status can suffer from methodological shortcomings (Shavers, 2007). Income is age dependent, unstable, and its

measures often suffer from a high nonresponse rate. Years of educational attainment does not necessarily have a one-to-one relationship with enjoyed socioeconomic benefits, its importance varies by social period and profession, and economic returns may differ across race due to, among other things, the quality of the education (Adler & Stewart, 2010; Braveman et al., 2005; Shavers, 2007; Williams, 1999). Subjective indicators like perceived scarcity or SSS can help address some of these shortcomings by providing more context for these objective measures. For example, SSS and scarcity could help illustrate the difference between being unemployed with a healthy retirement fund or investment account and no dependents versus being unemployed with no assets and having a dependent whereas income and employment status alone would paint similar pictures between these two scenarios.

Additionally, subjective indicators seem better suited for assessing socioeconomic standing as it relates to health in minority populations. Indeed, research has shown that the SSS predicts health outcomes better than income for Latinos (Frazini & Fernandez, 2006; Garza et al., 2017) and within large, multi-racial samples (Operario et al., 2004). Perceived scarcity may also indirectly measure intermediary determinants of health and, thus, be used to illustrate congruency or discrepancy between someone's experience of their resources and the resources they are reported to have. It could also be researched as a potential mediatory measure between SES indicators and health. The intermediary determinants of health in Figure 1 include material circumstances, behaviors and biological factors, and psychosocial factors. Scarcity directly asks about perceived available materials resources, or the lack thereof, which can be used alongside SES and SSS to gain a comprehensive picture of someone's socioeconomic position and their experience of that position. While scarcity does not directly measure health behaviors or any biological factors, time scarcity may give insight into the time available for someone to devote to

healthy behaviors or health behavior change. Finally, scarcity taps into an individual's psychosocial resources in the forms of their self-efficacy and social support.

1.2 The Current Study

Despite all these potentialities, little research exists on perceived scarcity beyond its measurement development (DeSousa et al., 2018; DeSousa et al., 2020). The current study adds to extant literature by investigating the demographic and objective SES predictors of scarcity, as well as examining the impact of SSS on scarcity and how scarcity varies uniquely with income as compared to SSS. While perceived scarcity represents a useful construct of interest to complement traditional SES measures and may represent a proxy measure for intermediary determinants of health, the field should first establish what individual-characteristics influence and covary with perceived scarcity. The findings of this study provide further development in this area and add to the literature's understanding of how perceived scarcity sits within the nomological network of socioeconomic indicators and social determinants.

Associations Among SES and Demographics Factors

While demographic factors are not direct predictors of SES, understanding some of the associations and context between demographics and SES can provide partial insight into what could be expected to be associated with scarcity. For example, the average American net worth (a measure of wealth accumulation) increases as one ages into retirement years before declining after age 75 (DeMatteo, 2021). Furthermore, average income tends to increase with age up until retirement (DeMatteo, 2021; Ou et al., 2008). While no other factors are being accounted for in these statistics, it could be expected that people experience less perceived scarcity as they age and accumulate greater wealth and stability (up to a point).

However, various other demographic factors can alter this trajectory. Changes in marital status, for example, can have an impact on one's income. Getting married or living with a partner can provide additional household income and render tax benefits compared to single earning status (Ou et al., 2008; Wainscoat, 2021). Separation or divorce, on the other hand, can result in negative economic consequences, particularly for women (Mcleod & Owens, 2004; Mortelsman & Jansen, 2010). While there is no clear association that can be discerned due to the myriad of situations people may find themselves in, marital status' relation to scarcity is worth investigating.

Women are not only more likely to experience negative economic consequences of divorce, but they also face potential gender and wage discrimination throughout their lifetime (Bisom-Rapp & Sargeant, 2014; Ortiz & Roscigno, 2009; Watson et al., 2002). Women earn on average only 82 cents for every dollar made by men with the wage gap being even larger for women of color (Bleiweis, 2020). This wage gap exponentially increases when examined over a 40 year period (Bleiweis, 2020). While there are a variety of factors contributing to this difference, there is the potential that women may feel more perceived scarcity on average compared to men due to factors stemming from gender discrimination. It is important to note that this literature is focused on cisgender women. Persons who identify as genders beyond the arbitrary binary division are at even greater risk for discrimination and experiencing economic hardship (Williams & Mann, 2017). Thus, three of the four samples in the current study used very inclusive measures of gender to attempt to examine the potential unique experiences of scarcity by persons beyond the gender binary.

Finally, there have been a variety of studies that have examined inequities in SES along racial lines. Rather than rehashing statistics reflecting the unjust economic discrimination

inflicted upon persons of color, it seems more helpful to understand the background of said discrimination. Centuries of racism, discrimination, xenophobia, and segregation in the United States have influenced institutions and policies at virtually every level of society (Kendi, 2016; Williams, 1999). This has had a profound negative impact on the safety, education, employment, earned income, and transfer of generational wealth for persons of color (Williams et al., 1999; Williams et al., 2016; Williams & Collins, 2001). As such, analyzing the relationship between race and scarcity may reveal further inequities that need to be recognized and addressed. In this study, race is simply being used as a proxy for the combination of factors that can influence socioeconomic standing due to one's skin color.

SSS and Demographic Factors: An Outline for Predicted Impacts on Scarcity

With this contextual background on SES, we now turn towards the literature on SSS to better refine anticipated hypotheses. Because there is little existing research on perceived scarcity or demographics and SES directly, the current study used the existing literature surrounding SSS to guide hypotheses about the prediction of outcomes since SSS is also a subjective measure. The SSS scale was designed to capture an individual's sense of their perceived social status (Adler & Stewart, 2007). It is proposed that an individual's perceived position within the social hierarchy accounts for multiple dimensions of socioeconomic status and reports their synthesized interpretation of how they compare to others with regards to these indicators. Two primary versions of the measure exist, each using a different reference group that participants rank themselves within. In the proximal comparison version, participants rank their status in comparison to their community, while in the distal comparison version participants rank their perceived status within the United States as a whole (Adler & Stewart, 2007). SSS has been found to predict levels of perceived scarcity, though the strength of this relationships depends on

the reference group being used; both proximal and distal SSS have exhibited negative correlations with scarcity, but the magnitude of this association was greater for proximal SSS (DeSousa et al., 2020).

Several studies have looked at the relationships between SES, race and ethnicity, and SSS, as well as the impact SES and race and ethnicity can have on SSS rankings. Both income and education have consistently been found to be positively associated with SSS in the majority of studies and these SES measures are also significant independent predictors of SSS in cross-sectional studies (Brown-Iannuzzi et al., 2014; Callan et al., 2015; Miyakawa et al., 2012; Operario et al., 2004; Singh-Manoux et al., 2003; Zell et al., 2018) including in exclusively Latinx populations (Reitzel et al., 2010). However, more mixed findings exist when examining the relationship between income and education and SSS among Black participants. While income and education have been found to be significantly positively correlated with SSS in a sample of solely Black participants (Reitzel et al., 2013), these correlations appear to be weaker in strength when compared to the correlations among White participants (Adler et al., 2008). Indeed, education predicts levels of SSS differentially for White participants versus Black participants, such that education was more strongly associated with SSS for White participants than Black participants. (Shaked et al., 2016). Findings from DeSousa and colleagues (2020) did find overall scarcity to have negative correlations with both income and education (since higher scarcity means lower status and less resources). As such, it is expected that income and education will overall negatively predict scarcity.

Race itself has also been found to be a correlate and predictor of SSS, with identifying as Black compared to White being related to greater SSS in one study (Shaked et al., 2016) and being a person of color associated with lower SSS in another (Operario et al., 2004). These

findings offer little in guiding the expected effects of race on scarcity; however, racial minorities in America are more likely to experience poverty, discrimination, and structural disadvantage compared to White Americans (Kawachi et al., 2005; Williams & Collins, 1995; Williams & Collins, 2001). Though not explicitly measured in this study, these differences in wealth distribution, experienced racism, and structural disadvantage may contribute to racial differences in perceived scarcity, with BIPOC groups facing higher levels of scarcity compared to White Americans.

Regarding other demographics, age has been found to be a significant correlate and predictor of SSS (Miyakawa et al., 2012; Operario et al., 2004) and may, thus, have a negative relationship with scarcity. As one ages, one is more likely to have a positive perception of one's subjective standing and greater resource accrual. Gender has mildly mixed findings with one study finding a significant correlation with SSS (Operario et al., 2004) while others did not (Brown-Iannuzzi et al., 2014; Reitzel et al., 2010; Shaked et al., 2016). This research indicates that we would not expect gender alone to significantly impact scarcity. Finally, both employment status and marital status have not been found to predict individuals' SSS rankings (Miyakawa et al., 2012; Reitzel et al., 2010; Reitzel et al., 2013; Shaked et al., 2016) or, in the case of employment status, scarcity (DeSousa et al., 2020) and are likewise not anticipated to impact perceived levels of scarcity in this study.

Summary

In sum, previous research has found that SES can be influenced by or vary with demographic factors such as race, gender, and age. These demographics likely are not direct predictors of SES but rather are markers tapping into some of the social determinants individuals may face. Literature on SSS shows that subjective perceptions of one's status can also vary based

on demographic factors such as age; however, race and gender have not been shown to have consistent effects across studies. Additionally, employment and marital status have not consistently been related to either SES or SSS but previous research has found both income and education to be positively related to perceived scarcity (DeSousa et al., 2020). Thus, a mixture of findings regarding SES, SSS, and insights from other literature lead to the following hypotheses:

1.3 Hypotheses

A visual representation of these effects can be seen in Figure 2.

Objective Socioeconomic Indicators

1. Household income will have a moderate negative linear impact on scarcity while controlling for other SES variables.
2. Education will have a weak negative linear impact on scarcity while controlling for other SES variables.
3. Employment status will have no significant impact on scarcity levels while controlling for other SES variables.

Demographic Factors

4. Age will have a weak negative linear impact on scarcity when controlling for other demographic variables.
5. Black and Latinx participants will have higher average scarcity levels compared to White participants when controlling for other demographic variables.
6. Gender and marital status will have no significant impact on scarcity levels when controlling for other demographic variables.

Subjective Social Status

7. Both proximal and distal forms of SSS will each have a negative linear impact on scarcity and the magnitudes of the effects will be weak to moderate.

Construct Distinctiveness

8. Since SSS and perceived scarcity should be distinct constructs, semi-correlational analyses will reveal scarcity to have a unique relationship with income while accounting for both forms of SSS.

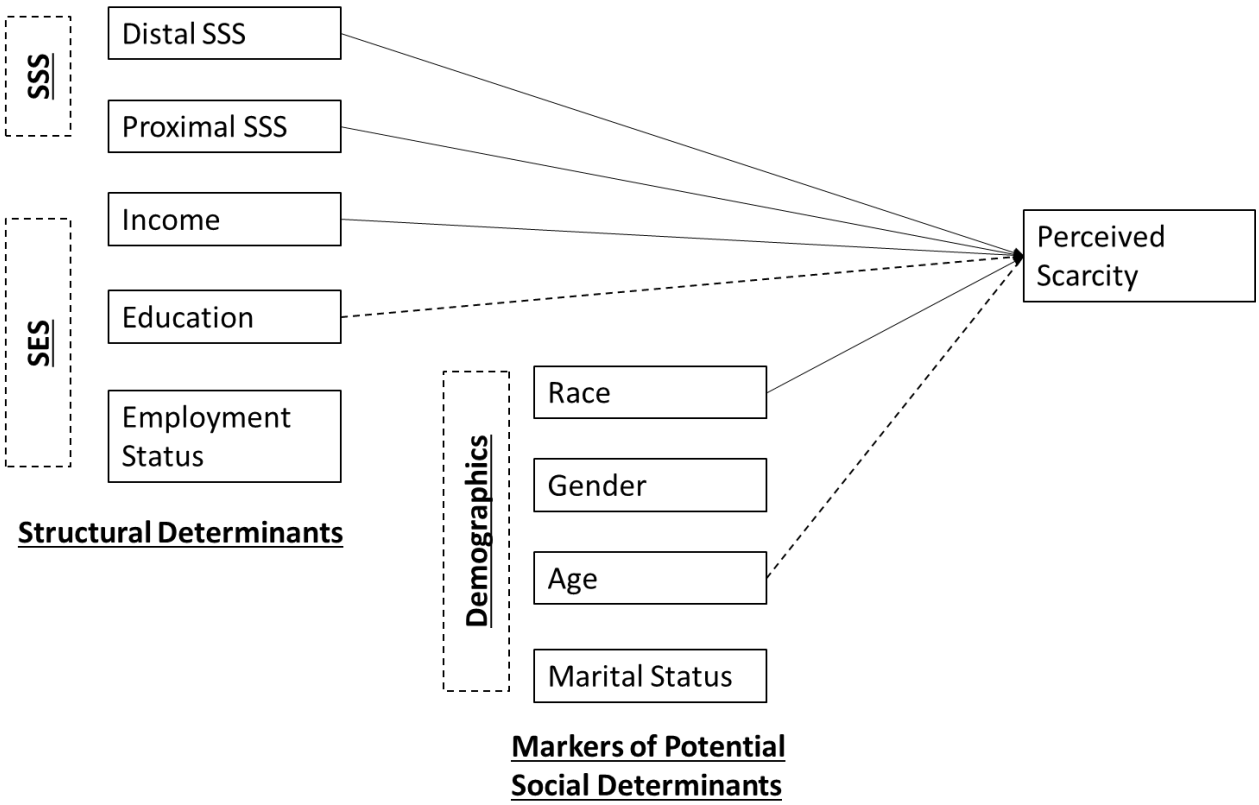

Figure 2. Diagram of expected relationships among study variables.

CHAPTER 2: METHOD

This study used secondary data from four separate studies, described below. The target population for this research is adults 18 and older living in the United States. Due to the restrictions on accessing this population, the targeted sampling frame became adults 18 and older living in the United States with computer and internet access who would be able to complete an online survey in English. Each of the four studies used online recruitment methods to gain participants, and each study used the same measures for the constructs of interest; however, two studies were missing some study variables (noted below). A comparison of participant characteristics across the samples can be viewed in Appendix B.

2.1 Study 1: General Population

Participants and Procedure

Data were collected from 382 participants recruited through Amazon's Mechanical Turk (MTurk) platform. MTurk is an online crowdsourcing marketplace often used for participant recruitment and allows individuals signed up on the site, known as mechanical turk workers, to complete tasks in exchange for payment (in this case, a survey) (Goodman et al., 2013). MTurk has been shown to be capable of providing broad racial/ethnic diversity within samples, though many users have had prior exposure to psychological studies and the overall participant pool is not representative of the U.S. population (Paolacci & Chandler, 2014). Despite this, participant recruitment is rapid, and the data obtained is frequently considered to be as reliable as that obtained from other traditional collection methods (Buhrmester et al., 2016; Mortensen & Hughes, 2018).

Eligibility requirements for signup included being based in the United States, 18 years of age or older, and able to read and understand English. Participants were compensated $1 for their participation in the study, which involved answering the pre-development form of the Perceived Scarcity Scale (PScS) followed by a demographics survey on Qualtrics. Thirty-five participants were excluded for either incomplete data or being a duplicate responder as identified through their MTurk worker ID's. The resulting operational sample was 347 participants.

Participants were mostly White (*N* =226, 65.1%), with 20.5% identifying as Latinx (*N* = 71), 6.9% identifying as Black (*N* = 24), 4.6% identifying as Asian American (*N* = 16), and the remaining participants identifying as another race (*N* = 10, 2.8%). The sample consisted of 165 women, 182 men, M_{age} = 36.7, age range 20-77. Most of the participants were either married/partnered (*N* =184, 53%) or single (*N* = 136, 39%). Thirty-seven percent of participants held a 4-year college degree or higher (N = 130) and education ranged from less than high school to holding a terminal degree. Participants' annual household income ranged from less than $10k to greater than $500k. The majority of participants were employed full time (*N* = 243, 70%).

2.2 Study 2: Recent Primary Care Patients

Participants and Procedure

Data were collected from 182 adults recruited through Amazon Mechanical Turk (Mturk). Eligibility requirements included being able to read English, being 18 years of age or older, having undergone routine care or a physical exam with a primary care physician in the U.S. within the past 90 days (defined as a recent visit), and having discussed physical activity or exercise with their physician during their recent visit. Routine care was defined as visits for chronic disease management or preventative care. Routine care did not include visits for acute

illness or injury (e.g., cold, flu, or recent accident). These requirements were added for the purposes of a different investigation and are not relevant to this current study.

Participants were compensated $3.75 for their participation in the study, which involved responding to a 10-15 minute survey that included the perceived scarcity scale and questions about their demographics, SSS, and SES. A total of 34 participants were excluded from data analysis due to incomplete data, not meeting post-screening eligibility criteria, or providing a duplicate response. The final operational sample was 148 participants.

Participants were mostly White (*N* =116, 78.4%), with 12.8% identifying as Black (*N* = 19), 4.1% identifying as Latinx (*N* = 6), 3.4% identifying as South Asian (*N* = 5), and the remaining participants identifying as another race (*N* = 6). The sample consisted of 76 men, 71 women, and 1 transwoman, M_{age} = 38.7, age range 18-70. Most of the participants were either married/partnered (*N* =68, 46%) or single (*N* = 43, 29%). Sixty-four percent of participants held a 4-year college degree or higher (N = 94) and education ranged from a high school diploma to having a terminal degree. Participants' annual household income ranged from less than $10k to greater than $150k. The majority of participants were employed full time (*N* = 124, 84%).

2.3 Study 3: All Female

Participants and Procedure

Data were collected from 404 adults recruited through MTurk, social media, and word of mouth. Eligibility requirements included being located within the United States, speaking fluent English, identifying as female in gender, not being pregnant at time of survey completion, and reporting no history of diagnosis or treatment for an eating disorder. Similar to above, these requirements were added for the purposes of a different investigation and are not relevant to the current study. MTurk participants were compensated $1 for their participation while social

media/word of mouth participants were enrolled in a random drawing of 5 $10 Target gift cards. Procedures included completing an eligibility questionnaire and then the study survey. A total of 176 participants were excluded from data analysis due to unreliable or incomplete responses or due to providing poor quality data. The final operational sample was 264 participants.

Participants were mostly White (*N* =188, 71.2%), with 17% identifying as Black (*N* = 45), 6.8% identifying as Latinx (*N* = 18), 4.9% identifying as South Asian (*N* = 13), and the remaining participants identifying as another race or preferring not to answer (*N* = 32). The sample consisted of all women, M_{age} = 36.5, age range 21-72. Most of the participants were either married/partnered (*N* =160, 61%) or single (*N* = 38, 14%). Eighty-eight percent of participants held a 4-year college degree or higher (N = 130) and education ranged from less than high school to having a terminal degree. Participants' annual household income ranged from less than $10k to greater than $150k. The majority of participants were employed full time (*N* = 222, 84.1%).

2.4 Study 4: College Students

Participants and Procedure

Data were collected from 181 students recruited through the University of North Carolina at Charlotte's (UNCC) SONA system, the online forum for UNCC's psychology research pool. Eligibility requirements included being 18 years of age or older, able to read and speak English proficiently, being able and willing to walk outdoors for 30 minutes, having a smartphone with app access, being able to access a survey before and after an outdoor walk, and being able to take photographs during an outdoor walk. These requirements were added for the purposes of a different investigation and are not relevant to the current study. Participants received SONA credit as compensation for their participation. Participants completed a pre-walk survey, engaged

in a 30 minute self-guided walk while taking photos, and then filled out a post-walk survey. The current study's variables were part of the pre-walk survey. Fourteen participants were excluded from analyses leaving an operational sample of 167 participants.

Participants were mostly White (*N* = 99, 59.3%), with 16.2% identifying as Black (*N* = 27), 13.8% identifying as East or South Asian (*N* = 23), 12% identifying as Latinx (*N* = 20), and the remaining participants identifying as another race (*N* = 5, 3%). Participants mostly identified as male (*N* = 82, 49.1%), with 47.9% identifying as female (*N* = 80), 2.4% identifying as non-binary or gender nonconforming (*N* = 4), and one participant preferring not to disclose (.6%). The mean age was 19.5, with ages ranging from 18-45. Because the sample consisted of college students, participants were asked to report their parents' education level and asked to report their parents' household income if they were a dependent. Seventy percent of participants' parents held a 4-year college degree or higher (*N* =116) and education ranged from less than high school to obtaining a terminal degree. Participants' reported annual household income ranged from less than $10k to $150k or more.

2.5 Measures Across Studies

Copies of all measures can be found in Appendix A.

Perceived Scarcity Scale (PScS)

The Perceived Scarcity Scale is a 24-item scale developed by DeSousa and colleagues (2020) to assess participants' experiences of scarcity in three domains: material, time, and psychosocial resources. Items were rated on a 5-point Likert scale, 1 = *Strongly Disagree* to 5 = *Strongly Agree*. Each of the three subscales contained eight items, including material scarcity (e.g. "I go hungry because I cannot afford to buy more food"), time scarcity (e.g. "I have more to do than I have time to do it in"), and psychosocial resources scarcity (e.g. "If I were unable to

provide for myself, there are people in my life who would help me make ends meet"). The current study utilized total scarcity scores in the initial analyses (i.e. the sum score across the 24 items, possible scores from 24-120) to assess participants overall 'sense' of scarcity present in their lives. That is, their summed experience of scarcity and the cross-cutting feeling of 'not having enough'. Post-hoc analyses explored relationships between study variables and each domain of scarcity to clarify how domains came together to produce results, or discern which domains may be more relevant for certain outcomes. Reliabilities for the scarcity scale in each sample can be seen in Figure 3. Correlations between the total scale scores and scarcity domain scores for each sample can be found in Appendix C.

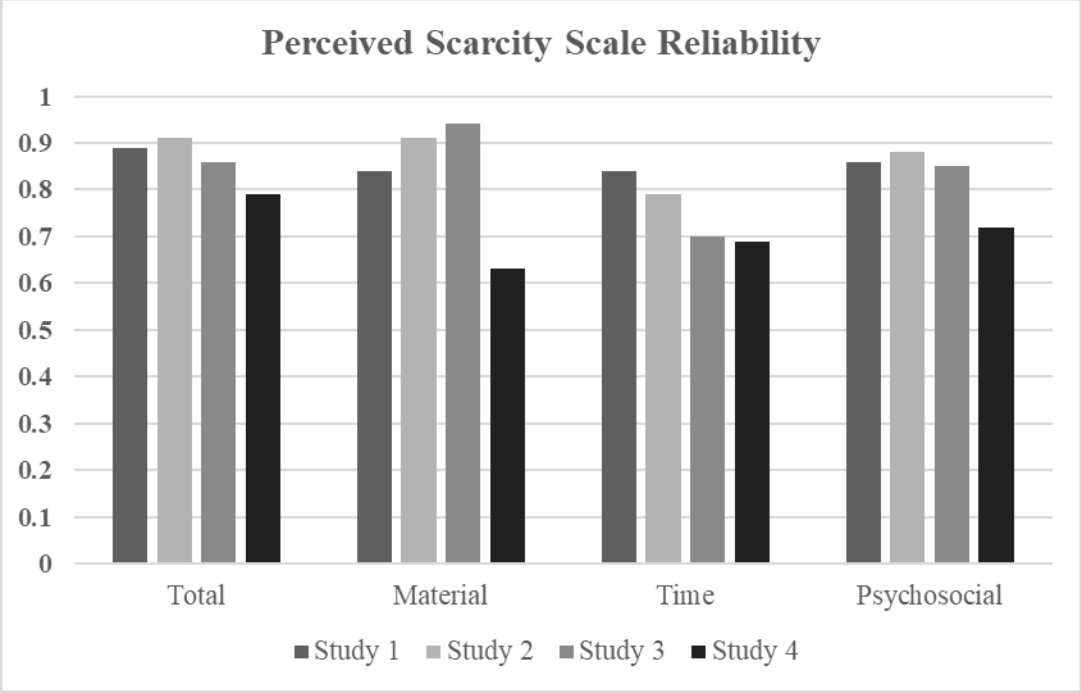

Figure 3. Reliabilities of the Perceived Scarcity Scale across samples, broken down by total scale reliability and reliabilities for each domain of the scale. Reliabilities for the total scale were within acceptable levels across samples, while reliabilities for the scale and its subdomains were notably lower in the college student sample (study 4) compared to the other samples.

Subjective Social Status

The Macarthur Scale of Subjective Social Status (Adler & Stewart, 2007) is a 2-item measure designed to assess participants' perspectives on their subjective social standing within American society as a whole (distal comparison) and within their community (proximal comparison). For the distal scale, participants denoted their relative placement on a ten-rung ladder with the top of the ladder representing those who are the best off in American society (those with the most money, most education, and respected jobs/highest standing). The bottom of the ladder represents the worst off in American society (least money, least education, and least respected jobs or no job/lowest standing). For the proximal scale, participants denoted their relative placement on a ten-rung ladder with the top of the ladder consisting of people who have the highest standing in their community and the bottom consisting of people who have the lowest standing in their community; participants were asked to define 'community' in "whatever way was most meaningful to them." Scores range from 0 to 10 for both items. Study 3 did not collect SSS data.

Individual Socioeconomic Status

While answering the demographics survey, participants were asked to denote their annual household income; options included 13 categories that ranged from ≤ $10,000 to ≥ $500,000. As a means to determine education level, participants were given 8 categories and asked to mark their highest level of education. The options included: less than high school, high school graduate, some college but no degree, 2-year college degree, 4-year college degree, some postbaccalaureate work but no degree, master degree or equivalent, and terminal degree (e.g. PhD, MD). Employment status was also assessed by having participants note whether they were currently employed full-time, part-time, unemployed, retired, disabled, or a student.

Socioeconomic status (SES) has been measured in a myriad of ways, but traditional indicators used in research conducted in the United States have consisted of income, education level, and occupation, or some composite of these (Oakes & Rossi, 2003; Shavers, 2007). Because each individual measure is a unique aspect of the broad construct that is SES, using composite scores can result in confounding since these measures, though correlated, are not equally interchangeable among all racial groups (Adler & Stewart, 2010; Braveman et al., 2005; Shavers, 2007; Williams, 1999). As such, participants' household income, educational level, and employment status were used independently to assess their level of SES.

Notably, study 4 did not collect employment status data since all participants were students. Parental education level was also assessed in study 4 using the same categories.

Demographics

Participants completed a demographic questionnaire which assessed age, race, gender (male; female; non-binary; gender nonconforming; genderqueer; gender fluid; trans woman; trans man), and marital/partnered status (single, never married; married; separated; divorced; widowed). Study 4 did not collect data on marital status. Note that in studies 2, 3, and 4 participants had the option to select all that applied if they identified as multiracial, thus, racial categories may not add to 100%.

CHAPTER 3: DATA ANALYSIS

All analyses were conducted in SPSS version 27. Descriptive and frequency statistics were generated for all measures, and zero-order correlations were generated for all continuous variables. Though technically considered to be ordinal level data, both household income and education were treated as interval data for ease of analyses; however, Pearson's *r* values were compared to Spearman's Rho correlations to check appropriateness and values were similar. Gender, employment status, marital status, and race were all dummy coded. The reference groups respectively consisted of males, full-time employees, married individuals, and White individuals. Income, education, age, and proximal and distal SSS were each mean-centered in order to aid interpretation of equation constants. Analyses were limited for sample 4 since all participants were college students (e.g. employment and marital status were not collected). Likewise, no analyses for SSS were conducted for sample 3 due to missing data.

In order to test hypotheses regarding linear relationships, three sets of simultaneous multiple regression analyses were conducted for each of the four samples (i.e. each sample was analyzed individually). Testing each sample separately was done to prevent sampling bias from contaminating a merged dataset and allow examination of cross-sample consistency since participant characteristics varied. The first set of analyses focused on the relationship between demographic variables and perceived scarcity with age, race, gender, and marital status entered as predictors and perceived scarcity as the outcome variable. The second set of analyses explored the relationship between objective SES indicators and perceived scarcity with income, education, and employment status entered as predictors and perceived scarcity as the outcome. Finally, to examine the relationship between SSS and perceived scarcity, both proximal and distal SSS were

entered as predictors with perceived scarcity as the outcome. In order to test construct distinctiveness, a separate set of simultaneous entry multiple regression analyses were conducted in order to extract semi-partial correlations. Income was regressed on perceived scarcity, proximal SSS, and distal SSS. Sizable semi-partial correlations for each variable would indicate that scarcity and SSS each have their own, distinct relationship with income and, thus, are tapping into the construct of SES differently. This would support that while both SSS and perceived scarcity are subjective they are measuring different core constructs.

CHAPTER 4: RESULTS

Summarized, cross-sample comparison tables for all results can be found in Appendix D.

4.1 Study 1: General Population

Descriptives

Total scarcity scores, age, household income, education level attained, distal SSS and proximal SSS all displayed means and standard deviations that were within an appropriate range (Table 1). Pearson product moment correlation analyses revealed that age, household income, distal SSS, and proximal SSS all had significant negative correlations with perceived scarcity that were small to moderate in strength (Table 1). As age, income, and distal and proximal SSS increase in value individuals tend to report less perceived scarcity. These correlational results are in expected directions; further, proximal SSS had a stronger relationship to scarcity than distal SSS which aligns with previous findings. Surprisingly, education level was unrelated to levels of scarcity.

Table 1

Descriptive Statistics and Zero-order Correlations Among Interval-level Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6
1. Perceived Scarcity	57.99	16.26	--					
2. Household Income	6.64	2.66	**-.32****	--				
3. Education	4.27	1.55	-.05	**.27****	--			
4. Age	36.77	11.47	**-.23****	.01	.01	--		
5. SSS Distal	4.65	1.89	**-.16****	**.43****	**.22****	-.06	--	
6. SSS Proximal	4.72	1.85	**-.28****	**.43****	**.25****	-.05	**.80****	--

Note. $N = 347$. * $p < .05$. ** $p < .01$. SSS = Subjective Social Status. Perceived scarcity scores range from 24 to 120. Household income is measured as 13 ranked categories, thus scores range from 1 to 13 with higher numbers indicating higher income brackets; a detailed breakdown is given in Appendix B. Education is measured as 8 ranked categories, thus scores range from 1 to 8 with higher numbers indicating higher levels of educational achievement; a detailed breakdown is given in Appendix B. Subjective social status scores range from 1 to 10, with higher scores indicating higher perceptions of personal standing within United States as a whole (distal) or one's community (proximal).

Semipartial Correlations

In order to support perceived scarcity as a construct independent from SSS, semi-partial correlation analyses were conducted in order to investigate whether perceived scarcity still has a unique relationship with income after accounting for any potential overlapping variance with SSS. Findings show that while the association between income and scarcity dropped in strength, it remained significant and similar in magnitude, situated at the threshold of a moderate effect while accounting for both proximal and distal SSS (Table 2). Interestingly, the relationship between proximal SSS and income drastically weakened when accounting for any overlapping variance with scarcity and distal SSS. Further, the relationship between distal SSS and income remained significant but dropped from a large effect to a small effect when accounting for both scarcity and proximal SSS. Follow-up analyses revealed that the significant drops in both forms of SSS were due to the high overlap between both forms of SSS (Table 2). Overall, results suggest that experiences of perceived scarcity are uniquely associated with income when accounting for SSS.

Table 2

Semi-partial Correlations Among Subjective Indicators with Income

Variable	Zero-Order Correlation	Semi-partial Correlation with Household Income

Model 1	Perceived Scarcity	-.32	-.22
	SSS (Distal)	.43	.17
	SSS (Proximal)	.43	.09
Model 2	Perceived Scarcity	-.32	-.25
	SSS (Distal)	.43	.38
Model 3	Perceived Scarcity	-.32	-.21
	SSS (Proximal)	.43	.35

Note. $N = 347$. Model 1 semi-partial correlation values were generated while simultaneously accounting for all three subjective indicators, while models 2 and 3 looked only at one form of SSS.

Regression Results

Demographics. In order to test the influence of demographic variables on scarcity, a simultaneous-entry multiple regression analysis was conducted. Race, gender, marital status, and age were each entered as criterions with total scarcity as the outcome. These demographic variables overall accounted for 13% of the variance in perceived scarcity scores (Table 3). When controlling for all other demographic variables, gender was found to have a significant influence on perceived scarcity scores such that women reported experiencing higher average scarcity scores compared to men (Table 3). This finding was unanticipated and does not align with predicted hypotheses. Findings also indicated that single participants had significantly higher scarcity levels compared to married individuals, when accounting for other demographics. This finding was also not predicted (Table 3). Finally, age was found to have a weak but significant negative association with scarcity scores such that as age increases scarcity scores decrease when other demographic factors are controlled (Table 3).

Table 3

Simultaneous-Entry Multiple Regression Results: Demographic Factors Predicting Perceived Scarcity

Model	*b*	S.E.	R^2

Demographics				.13
	(Intercept)	51.51	1.66	
	Race: Black	-.05	3.38	
	Race: Asian Am.	7.39	4.03	
	Race: Latinx	4.00	2.19	
	Race: Native Am.	-9.34	9.02	
	Race: Multiracial	-2.47	5.95	
	Female	**4.50***	1.76	
	Marital: Single	**6.96****	1.87	
	Marital: Separated	7.97	7.83	
	Marital: Divorced	6.73	3.83	
	Marital: Widowed	12.84	9.15	
	Age	**-.29****	.08	

Note. $N = 347$. $^{*}p < .05$; $^{**}p < .01$. *b* = unstandardized regression weight. S.E. = Standard Error. Constants display average scarcity scores for the reference groups. Race, gender, and marital status were all dummy-coded. Reference groups consist of White individuals, males, and married individuals.

Objective Socioeconomic Status. To test the influence of SES variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Interpretation of the total R^2 value indicates that objective SES factors account for 10% of the variance in scarcity scores (Table 4). While controlling for other SES factors, household income was found to have a significant negative association with perceived scarcity scores such that higher income levels predicted lower scarcity scores (Table 4). This aligns with predicted hypotheses, however, changes in education level were not significantly associated with difference in scarcity scores which goes against the expected prediction.

Table 4

Simultaneous-Entry Multiple Regression Results: SES Factors Predicting Perceived Scarcity

Model	*b*	S.E.	R^2

Objective SES				.11
	(Intercept)	58.18	1.00	
	Part-Time	.57	2.36	
	Unemployed.	-1.82	2.43	
	Household Income	**-2.04****	.33	
	Education Level	.40	.56	

Note. N = 347. * $p < .05$; ** $p < .01$. b = unstandardized regression weight. S.E. = Standard Error. SES = Socioeconomic Status. Constants display average scarcity scores for the reference group. Employment status was dummy-coded with full-time workers as the reference group.

Subjective Social Status. In order to examine the influence of SSS on scarcity, a simultaneous -entry multiple regression analysis was conducted with distal and proximal SSS entered simultaneously as criterion variables. Interpretation of the total R^2 value indicates that distal and proximal SSS rankings account for 9% of the variance in scarcity scores (Table 5). Unexpectedly, only proximal SSS was found to have a significant negative association with scarcity levels, such that as participants ranked themselves as higher standing in their community predicted scarcity scores dropped (Table 5). Distal SSS trended in significance (p = 0.51) but in the positively associated direction.

Table 5

Simultaneous Entry Multiple Regression Results: Associations Between SSS and Perceived Scarcity

Model		*b*	S.E.	R^2
Subjective Social Status				**.09****
	(Intercept)	57.99	.84	
	Distal SSS	1.43	.73	
	Proximal SSS	**-3.64****	.75	

Note. N = 347. * $p < .05$; ** $p < .01$. b = unstandardized regression weight. S.E. = Standard Error. SSS = Subjective Socioeconomic Status. Distal SSS = comparison to United States as a whole; Proximal SSS = comparison to those in your community.

4.2 Study 2: Recent Primary Care Patients

Descriptives

Total scarcity scores, age, household income, education level attained, distal SSS and proximal all displayed means and standard deviations that were within an appropriate range (Table 6). Pearson product moment correlation analyses revealed that age and household income had significant negative correlations with perceived scarcity that were small to moderate in strength (Table 6). This indicates that as these variables increase in value the less perceived scarcity individuals tend to report. These correlational results are in expected directions; however, education had a significant positive correlation with perceived scarcity, indicating that as participant education level increases the higher their level of overall perceived scarcity is. This result was opposite of the expected relationship and is discussed further in-depth later.

Table 6

Descriptive Statistics and Zero-order Correlations Among Interval-level Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6
1. Perceived Scarcity	56.94	17.25	--					
2. Household Income	6.80	2.54	**-.31****	--				
3. Education	4.82	1.72	**.22****	**.28****	--			
4. Age	38.71	12.78	**-.21****	-.06	-.09	--		
5. SSS Distal	5.34	2.09	.02	**.53****	**.47****	**-.24****	--	
6. SSS Proximal	5.53	2.00	-.09	**.49****	**.47****	**-.22****	**.88****	--

Note. $N = 148$. * $p < .05$. ** $p < .01$. SSS = Subjective Social Status. Perceived scarcity scores range from 24 to 120. Household income is measured as 13 ranked categories, thus scores range from 1 to 13 with higher numbers indicating higher income brackets; a detailed breakdown is given in Appendix B. Education is measured as 8 ranked categories, thus scores range from 1 to 8 with higher numbers

indicating higher levels of educational achievement; a detailed breakdown is given in Appendix B. Subjective social status scores range from 1 to 10, with higher scores indicating higher perceptions of personal standing within United States as a whole (distal) or one's community (proximal).

Semipartial Correlations

In order to support perceived scarcity as a construct independent from SSS, semi-partial correlation analyses were conducted in order to investigate whether perceived scarcity still has a unique relationship with income when accounting for any potential overlapping variance with SSS. Findings show that the association between income and scarcity remained significant and unaltered suggesting SSS had no overlap in the variance between scarcity and income (Table 7). The relationship between proximal SSS and income drastically weakened when accounting for any overlapping variance with scarcity and distal SSS. Further, the relationship between distal SSS and income remained significant but dropped from a large effect to a small effect when accounting for both scarcity and proximal SSS. Follow-up analyses revealed that the drops in both forms of SSS were due to the high overlap between both forms of SSS (Table 7). Overall, results suggest that experiences of perceived scarcity are uniquely associated with income when accounting for SSS.

Table 7

Semi-partial Correlations Among Subjective Indicators with Income

	Variable	Zero-Order Correlation	Semi-partial Correlation with Household Income
Model 1	Perceived Scarcity	-.31	-.31
	SSS (Distal)	.53	.25
	SSS (Proximal)	.49	-.01
Model 2	Perceived Scarcity	-.31	-.31
	SSS (Distal)	.53	.53

Model 3	Perceived Scarcity	-.31	-.26
	SSS (Proximal)	.49	.46

Note. N = 148. Model 1 semi-partial correlation values were generated while simultaneously accounting for all three subjective indicators, while models 2 and 3 looked only at one form of SSS.

Regression Results

Demographics. In order to test the influence of demographic variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Race, gender, marital status, and age were each entered as criterions with total scarcity as the outcome. These demographic variables overall accounted for 13% of the variance in perceived scarcity scores (Table 8). When controlling for all other demographic variables, race was found to have a significant influence on perceived scarcity scores such that Black participants reported lower average scarcity levels compared to other participants (Table 8). This finding was unanticipated and is opposite of predicted hypotheses. Latinx participants did not significantly differ in their scarcity levels. Also contrary to hypotheses, age was unassociated with perceived scarcity.

Table 8

Simultaneous-Entry Multiple Regression Results: Demographic Factors Predicting Perceived Scarcity

Model		*b*	S.E.	R^2
Demographics				.13
	(Intercept)	60.57	2.51	
	Race: Latinx	7.81	7.08	
	Race: Black	**-9.82***	4.27	
	Race: Pacific Islander	9.04	16.98	
	Race: MENA	-3.90	17.00	
	Race: South Asian	2.43	7.74	
	Race: Other	-1.87	8.56	
	Female	-5.50	2.93	

Marital: Single	1.06	3.10
Marital: Separated	-17.22	12.26
Marital: Divorced	-.94	5.21
Marital: Widowed	-5.72	12.35
Age	-.22	.14

Note. $N = 148$. * $p < .05$; ** $p < .01$. *b* = unstandardized regression weight. S.E. = Standard Error. MENA = Middle Eastern/North African Constants display average scarcity scores for the reference groups. Race, gender, and marital status were all dummy-coded. Reference groups consist of White individuals, males, and married individuals.

Objective Socioeconomic Status. To test the influence of SES variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Interpretation of the total R^2 value indicates that objective SES factors account for 22% of the variance in scarcity scores (Table 9). While controlling for other SES factors, household income was found to have a significant negative association with perceived scarcity scores such that higher income levels predicted lower scarcity scores (Table 9). This aligns with predicted hypotheses, however, changes in education level were significantly positively associated with difference in scarcity scores which goes against the expected prediction. This indicates that increases in education level predicts increased experiences of scarcity.

Table 9

Simultaneous-Entry Multiple Regression Results: SES Factors Predicting Perceived Scarcity

Model		*b*	S.E.	R^2
Objective SES				.22
	(Intercept)	57.65	1.41	
	Part-Time	-4.03	4.61	
	Unemployed.	-3.42	8.17	
	Retired	-12.66	8.09	

Student	4.75	8.26
Disabled	19.65	15.95
Household Income	**-2.83****	.54
Education Level	**3.15****	.82

Note. N = 148. * $p < .05$; ** $p < .01$. *b* = unstandardized regression weight. S.E. = Standard Error. SES = Socioeconomic Status. Constants display average scarcity scores for the reference group. Employment status was dummy-coded with full-time workers as the reference group.

Subjective Social Status. In order to examine the influence of SSS on scarcity, a simultaneous -entry multiple regression analysis was conducted with distal and proximal SSS entered simultaneously as criterion variables. Interpretation of the total R^2 value indicates that distal and proximal SSS rankings account for 5% of the variance in scarcity scores (Table 10). Unexpectedly, only proximal SSS was found to have a significant negative association with scarcity levels, such that as participants ranked themselves as higher standing in their community predicted scarcity scores dropped (Table 10). Distal SSS had a significant positive association with scarcity, indicating that higher self-ratings compared to others in the United States was associated with higher perceived scarcity scores, a finding opposite of the predicted hypothesis.

Table 10

Simultaneous-Entry Multiple Regression Results: Associations Between SSS and Perceived Scarcity

Model		*b*	S.E.	R^2
Subjective Social Status				**.05***
	(Intercept)	57.01	1.40	
	Distal SSS	**3.63***	1.42	
	Proximal SSS	**-4.14****	1.48	

Note. N = 148. * $p < .05$; ** $p < .01$. *b* = unstandardized regression weight. S.E. = Standard Error. SSS = Subjective Socioeconomic Status. Distal SSS = comparison to United States as a whole; Proximal SSS = comparison to those in your community.

4.3 Study 3: All Female

Descriptives

Total scarcity scores, age, and household income, all displayed means and standard deviations that were within an appropriate range (Table 11). The education levels of participants were well above national averages. Pearson product moment correlation analyses revealed that age and household income had significant negative correlations with perceived scarcity that were small to moderate in strength (Table 11). This indicates that as these variables increase in value the less perceived scarcity individuals tend to report. These correlational results are in expected directions. Surprisingly, education level was unrelated to levels of scarcity.

Table 11

Descriptive Statistics and Zero-order Correlations Among Interval-level Study Variables

Variable	*M*	*SD*	1	2	3	4
1. Perceived Scarcity	63.11	14.35	--			
2. Household Income	7.24	2.60	**-.32****	--		
3. Education	5.70	1.23	.1	**.22****	--	
4. Age	36.54	11.43	**-.34****	**.27****	-.07	--

Note. $N = 264$. * $p < .05$. ** $p < .01$. SSS = Subjective Social Status. Perceived scarcity scores range from 24 to 120. Household income is measured as 13 ranked categories, thus scores range from 1 to 13 with higher numbers indicating higher income brackets; a detailed breakdown is given in Appendix B. Education is measured as 8 ranked categories, thus scores range from 1 to 8 with higher numbers indicating higher levels of educational achievement; a detailed breakdown is given in Appendix B. Subjective social status scores range from 1 to 10, with higher scores indicating higher perceptions of personal standing within United States as a whole (distal) or one's community (proximal).

Regression Results

Demographics. In order to test the influence of demographic variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Race, marital status, and age were each entered as criterions with total scarcity as the outcome. These demographic variables overall accounted for 19% of the variance in perceived scarcity scores (Table 12). When controlling for all other demographic variables, race was found to have a significant influence on perceived scarcity scores such that Black women reported higher average scarcity levels compared to other female participants (Table 12). While this aligns with hypotheses, it is important to note that this is an all-female sample whilst the hypotheses predicted higher scarcity broadly for Black participants. Latinx participants did not significantly differ in their scarcity levels. Finally, age was found to have a weak but significant negative association with scarcity scores such that as age increases scarcity scores decrease when other demographic factors are controlled (Table 12).

Table 12

Simultaneous-Entry Multiple Regression Results: Demographic Factors Predicting Perceived Scarcity

Model		*b*	S.E.	R^2
Demographics				.19
	(Intercept)	62.23	1.14	
	Race: Latinx	5.69	3.62	
	Race: Black	**8.72****	2.29	
	Race: East Asian	-2.33	4.82	
	Race: Native American	3.33	6.06	
	Race: South Asian	2.05	4.34	
	Race: Multiracial	-15.18	12.84	
	Race: Other	-5.65	9.56	
	Marital: Single	-2.67	1.87	

	Age	**-.41****	.08

Note. N = 264. * $p < .05$; ** $p < .01$. b = unstandardized regression weight. S.E. = Standard Error. MENA = Middle Eastern/North African Constants display average scarcity scores for the reference groups. Race, gender, and marital status were all dummy-coded. Reference groups consist of White individuals, males, and married individuals.

Objective Socioeconomic Status. To test the influence of SES variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Interpretation of the total R^2 value indicates that objective SES factors account for 26% of the variance in scarcity scores (Table 13). While controlling for other SES factors, household income was found to have a significant negative association with perceived scarcity scores such that higher income levels predicted lower scarcity scores (Table 13). This aligns with predicted hypotheses, however, like in study 2 changes in education level were significantly positively associated with difference in scarcity scores which goes against the expected prediction. This indicates that increases in education level predicts increased experiences of scarcity. Significant effects were found for employment status, however, each group contained less than 20 participants and, thus, these results will not be interpreted due to the potential for these to be erroneous effects.

Table 13

Simultaneous-Entry Multiple Regression Results: SES Factors Predicting Perceived Scarcity

Model		*b*	S.E.	R^2
Objective SES Stage 2				.26
	(Intercept)	65.11	.84	
	Part-Time	-11.44	3.45	
	Unemployed.	**-13.07****	3.26	
	Retired	**-22.01****	5.70	
	Student	-8.61	5.71	
	Disabled	16.78	8.92	

Household Income	**-1.94****	.31
Education Level	**2.01****	.65

Note. $N = 264$. * $p < .05$; ** $p < .01$. *b* = unstandardized regression weight. S.E. = Standard Error. SES = Socioeconomic Status. Constants display average scarcity scores for the reference group. Employment status was dummy-coded with full-time workers as the reference group.

4.4 Study 4: College Students

Descriptives

Household income, parental education level attained, and distal SSS all showed elevated averages. Average age was young. Total scarcity scores and proximal SSS displayed means and standard deviations that were within an appropriate range (Table 14). Pearson product moment correlation analyses revealed that parental education, distal SSS, and proximal SSS had significant negative correlations with perceived scarcity that were small to moderate in strength (Table 14). This indicates that as these variables increase in value the less perceived scarcity individuals tend to report. These correlational results are in expected directions; however, household income was unexpectedly unrelated to scarcity. This may be due to the more regulated college environment. While personal education and age were also unrelated, this is not surprising given the restricted range of the data due to the sample's demographic (college students).

Table 14

Descriptive Statistics and Zero-order Correlations Among Interval-level Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Perceived Scarcity	58.11	9.94	--						
2. Household Income	8.21	2.66	-.16	--					
3. Education	4.82	1.72	-.08	-.07	--				

4. Parental Education	4.74	1.94	**-.20***	-.15	.03	--			
5. Age	19.5	3.76	-.01	-.12	**.35****	.11	--		
6. SSS Distal	9.20	6.34	**-.33****	-.12	-.06	.08	.03	--	
7. SSS Proximal	1.60	1.64	**-.33****	**-.34****	**.25****	-.11	.14	-.03	--

Note. $N = 167$. * $p < .05$. ** $p < .01$. SSS = Subjective Social Status. Perceived scarcity scores range from 24 to 120. Household income is measured as 13 ranked categories, thus scores range from 1 to 13 with higher numbers indicating higher income brackets; a detailed breakdown is given in Appendix B. Education is measured as 8 ranked categories, thus scores range from 1 to 8 with higher numbers indicating higher levels of educational achievement; a detailed breakdown is given in Appendix B. Subjective social status scores range from 1 to 10, with higher scores indicating higher perceptions of personal standing within United States as a whole (distal) or one's community (proximal).

Semipartial Correlations

In order to support perceived scarcity as a construct independent from SSS, semi-partial correlation analyses were conducted in order to investigate whether perceived scarcity still has a unique relationship with income when accounting for any potential overlapping variance with SSS. Findings show that the association between income and scarcity was weak to start in the current sample and was slightly weakened further when removing the overlap with SSS (Table 15). The relationship between distal SSS remained essentially unchanged partialing out the overlapping variance from scarcity and proximal SSS. The relationship between proximal SSS and income remained weak but switched the direction of the relationship, which is puzzling. Findings from this study do not conclusively demonstrate scarcity's uniqueness from SSS in a college population.

Table 15

Semi-partial Correlations Among Subjective Indicators with Income

	Variable	Zero-Order Correlation	Semi-partial Correlation with Household Income
Model 1	Perceived Scarcity	-.15	-.10
	SSS (Distal)	.25	.24
	SSS (Proximal)	.07	-.11
Model 2	Perceived Scarcity	-.15	-.08
	SSS (Distal)	.25	.21
Model 3	Perceived Scarcity	-.15	-.14
	SSS (Proximal)	.07	.02

Note. N = 167. Model 1 semi-partial correlation values were generated while simultaneously accounting for all three subjective indicators, while models 2 and 3 looked only at one form of SSS.

Regression Results

Demographics. In order to test the influence of demographic variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Race, gender, and age were each entered as criterions with total scarcity as the outcome. These demographic variables overall accounted for just 5% of the variance in perceived scarcity scores (Table 16). When controlling for all other demographic variables, gender was found to have a significant influence on perceived scarcity scores such females reported higher average scarcity levels compared to other genders (Table 16). This was an unexpected association. In this study, the lack of association between age and scarcity was not unsurprising given the lack of variability in age among participants.

Table 16

Simultaneous-Entry Multiple Regression Results: Demographic Factors Predicting Perceived Scarcity

Model	*b*	S.E.	R^2

Demographics				.05
	(Intercept)	56.53	1.30	
	Race: Latinx	1.62	2.43	
	Race: Black	-1.61	2.17	
	Race: East Asian	-1.41	3.31	
	Race: MENA	2.46	5.89	
	Race: South Asian	-3.44	2.95	
	Race: Other	.01	7.14	
	Female	**3.96***	1.59	
	Non-binary	2.94	4.61	
	Age	-.01	.21	

Note. $N = 167$. * $p < .05$; ** $p < .01$. *b* = unstandardized regression weight. S.E. = Standard Error. MENA = Middle Eastern/North African Constants display average scarcity scores for the reference groups. Race and gender were dummy-coded. Reference groups consist of White individuals and males.

Objective Socioeconomic Status. To test the influence of SES variables on scarcity, a simultaneous -entry multiple regression analysis was conducted. Interpretation of the total R^2 value indicates that objective SES factors account for 5% of the variance in college student scarcity scores (Table 17). No objective SES factors in this study were significantly associated with perceived scarcity scores, indicating that household/parental income and education factors do not significantly impact perceptions of scarcity for students in a college environment. It is important to note, however, that parental education did trend in significance ($p = .053$).

Table 17

Simultaneous-Entry Multiple Regression Results: SES Factors Predicting Perceived Scarcity

Model		*b*	S.E.	R^2
Objective SES				.05
	(Intercept)	58.44	.77	

Household Income	-.34	.31
Education Level	-1.50	1.90
Parent Education	-.80	.41

Note. N = 167. * $p < .05$; ** $p < .01$. b = unstandardized regression weight. S.E. = Standard Error. SES = Socioeconomic Status. Constants display average scarcity scores for the reference group.

Subjective Social Status. In order to examine the influence of SSS on scarcity, a simultaneous-entry multiple regression analysis was conducted with distal and proximal SSS entered simultaneously as criterion variables. Interpretation of the total R^2 value indicates that distal and proximal SSS rankings accounted for 13% of the variance in scarcity scores (Table 18). Both distal and proximal SSS were found to have a significant, but weak, negative association with scarcity levels, such that as participants ranked themselves as higher standing in their community or compared to others in the U.S. predicted scarcity scores dropped (Table 18).

Table 18

Simultaneous Entry Multiple Regression Results: Associations Between SSS and Perceived Scarcity

Model		b	S.E.	R^2
Subjective Social Status				**.13****
	(Intercept)	58.12	.71	
	Distal SSS	**-1.25***	.56	
	Proximal SSS	**-1.27***	.55	

Note. N = 167. * $p < .05$; ** $p < .01$. b = unstandardized regression weight. S.E. = Standard Error. SSS = Subjective Socioeconomic Status. Distal SSS = comparison to United States as a whole; Proximal SSS = comparison to those in your community.

4.5 Summary of Post-Hoc Analyses

Due to some inconsistencies and unexpected findings across samples, post-hoc analyses were conducted to examine what specific domains of scarcity were driving findings (i.e.

material, time, and/or psychosocial scarcity). While the overall sense of perceived scarcity was the main target for primary analyses, and the three subdomains of scarcity are related to and influence these perceptions (see Appendix C), scores for the different subdomains can vary by individual. Further, each subscale may be differentially related to outcomes. Sub-analyses can provide clarification about how each domain is coming together to produce observed outcomes, or whether a certain subscale is more relevant for particular outcomes. Analyses were conducted using the same format as was used for main findings, but inserting the individual domains of perceived scarcity (e.g. material scarcity, time scarcity, psychosocial scarcity) as the outcome variable.

Breakdown of Consistent Findings

Findings regarding age, income, and proximal SSS and their impact on total perceived scarcity were all in the anticipated direction. Post-hoc analyses further clarified what domain(s) of scarcity primarily contributed to these effects. Studies 1 and 3 both found that age had a weak negative association with total scarcity. Post-hoc exploration showed that these effects stemmed from both material and psychosocial scarcity for studies 1 and 3, that is, increased age was related to both lower material scarcity (b = -.15 to -.17, p < .01) and lower psychosocial scarcity (b = -.07 to -.12, p < .05). Further, increased age was also related to lower time scarcity in study 3 (b = -.11, p < .01). Interestingly, increased age was also related to lower material scarcity in study 2 (b = -.21, p < .01) but this was the only domain of scarcity that age was related to in this study. Overall, these results show that age's negative association with total scarcity is driven primarily by material and psychosocial scarcity, but time scarcity may also be related.

Income showed a consistent negative association with scarcity across all 3 non-college samples (studies 1-3). These effects were for both material scarcity (b = -.84 to -1.56, p < .01)

and psychosocial scarcity (b = -.28 to -1.09, p < .05) across the 3 studies, and a negative association between time scarcity and income was also found for studies 1 and 2 (b = -.30 to -.78, p < .05). Thus, as income increases all three forms of perceived scarcity (material, time, and psychosocial) appear to decrease. While no relationship between total perceived scarcity and income was found in study 4, household income did end up having a negative relationship with material scarcity in post-hoc analyses (b = -.36, p < .05), further strengthening the demonstration of a clear relationship between income and experiences of material scarcity.

Finally, post-hoc analyses gave a deeper look at the negative association between proximal SSS and scarcity. A negative association between proximal SSS and total scarcity was found for studies 1, 2 and 4. Proximal SSS had a negative relationship with material (b = -1.29, p < .01), time (b = -.94, p < .01), and psychosocial scarcity (b = -1.40, p < .01) in study 1 and negative relationships with time (b = -1.46, p < .01) and psychosocial scarcity (b = -1.59, p < .01) in study 2. The negative association between proximal SSS and scarcity in study 4 largely resulted from the relationship between proximal SSS and time scarcity (b = -.53, p < .05). In conclusion, greater proximal SSS appears to be associated with lessened experiences of time and psychosocial scarcity. However, material scarcity may also be decreased in some samples.

Clarifying Inconsistencies and Unexpected Findings Across Studies

Initial analyses revealed both unexpected findings (gender's relationship to scarcity, education's positive association with total scarcity) and some inconsistent findings across samples (total scarcity being lower for Black participants in one study but higher for Black participants in another, distal SSS being positively associated with total scarcity in one sample but negatively associated in another). While initial hypotheses expected the relationship between scarcity and gender to be null based on previous research, studies 1 and 4 both found that women

had higher levels of scarcity compared to men. Specifically, this relationship was driven primarily by time scarcity; females had less available time than they wanted or needed in comparison to men (b = 2.33 to 3.00, $p < .01$). It is interesting to note that this finding may not be age-dependent since sample 4 was a younger, college sample while sample 1 was an age-diverse adult sample.

Education's influence on scarcity was the opposite of what was predicted in that higher education levels were associated with increased experiences of scarcity in studies 2 and 3. Further analyses provide some potential clarification; these effects stemmed primarily from the contribution of material scarcity (b = 1.86 to 2.26, $p < .01$). In essence, higher education levels were associated with an increased sense of material scarcity.

Study 2 found that Black participants had lower average scarcity levels compared to other races while study 3 found that Black women had higher average scarcity levels compared to women of other races. Post-hoc analyses showed that Black participants' lower scarcity in study 2 stemmed from lower levels of time and psychosocial scarcity in comparison to participants of other races (b = -2.91 to -3.55, $p < .05$). However, study 3's finding that Black women had higher average scarcity resulted primarily from a greater sense of material scarcity compared to other races (b = 6.85, $p < .01$). Thus, the studies diverge in what domain(s) of scarcity primarily contributed towards the effects.

Distal SSS was initially hypothesized to have a negative association with total scarcity. Oddly, the relationship between distal SSS and scarcity was positive in study 2 and negative in study 4. Further exploration showed that distal SSS was positively associated with material (b = 1.47, $p < .05$) and time scarcity (b = .96, $p < .05$) in study 2 (thus, these domains contributed to the total scarcity effects in study 2) but in study 4 distal SSS was negatively associated with

psychosocial scarcity (b = -.69, p < .01) indicating an entirely different relationship between distal SSS and scarcity in this sample. A positive association between distal SSS and time scarcity could make sense in that a person who ranks themselves higher may also have more responsibilities that are attached to their status. It is unclear why a positive association between distal SSS and material scarcity might exist unless participants are ranking themselves much higher than how others may rank them based on their personal circumstances. It is important to note that study 4 was made up of entirely college students, and their environments are likely more regulated as a whole and participants may be sharing similar understanding or conceptualizations of the distal SSS construct when they answer the questionnaire (compared to a diverse adult sample). For example, higher distal SSS rankings may be associated with lower psychosocial scarcity because higher ranking individuals may have larger social circles and, thus, an increased sense of popularity and status.

CHAPTER 5: GENERAL DISCUSSION

This paper is one of the first to begin exploring the factors that influence the construct of perceived scarcity, a construct that has been proposed to account for a portion of the strong relationship between SES and health. The current study adds to extant literature by improving the literature's understanding of where perceived scarcity sits within the nomological network of socioeconomic indicators and social determinants and establishing what individual-characteristics influence and covary with perceived scarcity. Four studies using different samples were analyzed to determine the impact of demographics, objective SES indicators, and SSS on levels of perceived scarcity: post-hoc analyses further clarified these relationships. Previous literature and theoretical models suggest that factors such as age, race, income, education, and status are likely to influence how one perceives their resources (Brown-Iannuzzi et al., 2014; Callan et al., 2015; DeSousa et al., 2020; Miyakawa et al., 2012; Operario et al., 2004; Shaked et al., 2016; Singh-Manoux et al., 2003; Zell et al., 2018). Overall, results partially support the hypotheses predicted and are a first step into understanding the nomological network around perceived scarcity.

5.1 Age

Age and race were expected to impact participants' perceived scarcity while gender and marital status were not. Age was found to have a negative association with total scarcity as predicted in 2 of the 4 studies, however, this effect was more robust when considering material scarcity only, with a negative relationship appearing in 3 of the 4 studies. Age's negative relationship to perceived scarcity aligns with expectations because increases in age can be related to increases in status (Cundiff et al., 2013; Operario et al., 2004) and wealth accumulation

(Kessler & Wolff, 1991; McKernan et al., 2013), both of which lead to greater resource access. Increasing age is also related to decreases in debt over time in addition to the accumulation of financial assets (Hansen et al., 2008). These previous findings explain why material scarcity would have the strongest relationship to age. This may especially be the case for individuals belonging to more privileged, majority groups such as White males. For example, Hansen and colleagues (2008) found that men have better financial circumstances in older age compared to women while McKernan and colleagues (2013) found that White families have higher average wealth compared to Black or Hispanic families, and that the wealth of White households increases much more quickly as age increases. Given that the samples for the current studies were also composed of mostly White participants, there may be some limits on the relationship between age and scarcity that should be explored in future studies, such as race being a moderator of this relationship.

Examining other domains of scarcity, age was found to have the weakest relationship with time scarcity. This could potentially be due to a weak linear relationship between the two variables; in the United States, adults typically work until retirement age and during this period one's available time is not likely to markedly change (on average). Thus, retirement status may be a better explanatory age-related factor for a decrease in time scarcity. Once individuals cross the retirement threshold, time availability increases. In this case, increasing age does not greatly impact time scarcity until the retirement threshold is hit. While studies 2 and 3 only had six and five retired participants, respectively, both studies found retired status to be associated with significantly decreased time scarcity. Extant literature provides support for these interpretations as a qualitative study by Ekerdt and Koss (2016) found that retirees had an increased sense of control over their time. Quantitative studies have also found increases in time availability

(Behncke, 2012) and increases in leisure time activity after the onset of retirement (Oshio & Kan, 2017; Stenholm et al., 2016).

5.2 Race

Findings regarding race were mixed. While one study found Black participants had more total scarcity compared to other participants, another study found that they had less total scarcity. It is important to note that the study that found an increased sense of scarcity was an all-female sample, potentially indicating that there is an interaction effect between race and gender. In essence, Black women's experience of scarcity may potentially be different than the experience of Black men. SES literature provides support for this possibility, as there have been clear race-gender interactions for education and income level wherein Black women had lower self-rated health compared to Black men, White men, and White women even at the same education and income levels (Brown et al., 2016; Cummings & Jackson, 2008). Black women also receive lower wages at the same education level compared to Black men and men of other races (Bradbury, 2002). Further, Black women's experience of psychosocial stressors such as discrimination have been found to be qualitatively different from those of Black men (Kwate & Goodman, 2015), which means this population's subjective perception of other experiences like scarcity may be different as well. As Crenshaw (1989) describes, Black women are subject to "double discrimination" through their intersectional identity which may place them at greater vulnerability for experiencing subjective scarcity. However, some research contradicts the hypothesis that financial strain significantly differs between Black women and men (Kwate & Goodman, 2015).

While these findings potentially explain the higher scarcity in an all-female Black cohort, the lower scarcity in another study sample remains to be explained. Mixed findings for race have

also been found using the subjective social status scale. Studies that only administered the distal version of the SSS scale found that Black participants did rate themselves lower on the SSS ladder compared to how White participants rated themselves on the ladder (Adler et al., 2008; Operario et al., 2004; Ostrove et al., 2000). Wolff and colleagues (2009) had similar results for the distal scale. However, they found that Black participants rated themselves higher on the proximal SSS scale compared to how White participants rated themselves. A newer study by Shaked and colleagues (2016) had findings contrary to these previous studies and found that Black participants rated themselves higher on the distal SSS scale compared to White participants. While these results are inconsistent, all these studies (and others) have consistently found that the SSS scale had weaker correlations with objective SES indicators for Black participants compared to White participants (Adler et al., 2008; Cundiff & Matthews, 2017; Ostrove et al., 2000; Shaked et al., 2016; Wolff et al., 2009). It is posited that Black participants, and potentially participants of other races, take into account different factors in determining their SSS as compared to White participants, and that these factors are less related to traditional SES metrics (Wolff et al., 2009). A similar difference could be occurring when Black participants think about their scarcity, and their perceptions of their scarcity may be differentially influenced by who their primary comparative reference group is (e.g. their community versus the United States as whole). All in all, conclusions cannot yet be made about the effects of race on scarcity from the current set of studies and previous literature paints a similarly complicated picture. However, a recent study from DeSousa and Rego (in review) did find that White participants had lower levels of material scarcity than BIPOC participants, so a clearer picture is on the path to emerging.

5.3 Gender

Gender was hypothesized to not significantly influence scarcity due to the broad nature of this identity, however, 2 of the 4 studies (a general adult and a college sample) found that women experienced more time scarcity compared to men. It is not directly clear why this might be the case but it could be speculated that this is due to the influence of gender roles or responsibilities; that is, on average women may have more time demands in their lives due to a greater number of obligations to fulfill. Home maintenance and childcare needs may vary by household depending on factors such as household makeup and employment status, with women potentially shouldering the burden. Having multiple roles to fulfill (e.g. worker and mother) may lead to sacrifices in personal time to meet demands (Bianchi, 2000; Hochschild & Manchung, 2003; Robinson & Godbey, 1999; Sayer, 2001) and increased feelings of being rushed (Strazdins et al., 2016). Strazdins and colleagues (2012) found that working women will alter their work time to account for the needs of their spouse and children, but the opposite is found less often. Further, if mothers are the sole-earners for a household they often have to work longer hours compared to dual-earner households (Strazdins et al., 2012). This interaction between employment status and gender has borne interesting findings in the literature; Baxter and colleagues (2007) found that women working full-time had worse health and well-being than women working part-time, but the inverse was true for men.

Another gender difference that could explain this study's findings is the amount of free time and, more importantly, "pure" leisure time afforded to men versus women. Bittman and Wajcman (2000) found that across 10 Western, industrialized countries, a gender gap in free time was present in 6 of them wherein women had less free time. Additionally, the authors used Australian national data to separate out types of free time among women and men and found that within the free time women had, less of it was pure, uninterrupted leisure time for women

compared to men (no secondary activity being present) (Bittman & Wajcman, 2000). The literature also indicates that other interaction effects may be present. For example, Gallo and colleagues (2005) found that women with lower SES backgrounds had less perceived control and more social strain compared to women from higher SES backgrounds. This decreased sense of control and increased social conflict may lead women from these backgrounds to similarly report a lack of time in meeting life's demands due to rushing (Strazdins et al., 2016). Relatedly, when less resources are available, more time is needed to maintain a household in order to compensate (Douthitt, 2000).

5.4 Marital Status

Marital status did not have a clear effect on scarcity though the presence of mixed effects across studies indicate that it may influence scarcity under certain conditions rather than having no effect at all as predicted by hypotheses. Study 1 found that single participants experienced higher average scarcity compared to married participants across all measures of scarcity. However, studies 2 and 3 found that single participants had less material scarcity on average compared to married participants with no significant differences across other forms. Unfortunately, there were only a few participants in these studies that fell into the divorced/separated/widowed categories. The findings from study 1 seem to best align with extant literature, wherein marriage is a protective factor against negative outcomes (Kingston, 2013; Quinones et al., 2014; Rendall et al., 2011). Indeed, Fan and Babiarz (2019) found that single and divorced/separated individuals had lower financial satisfaction and more financial difficulty compared to married individuals, with the effects being stronger for women. Further, Yngwe and colleagues (2003) found that marital status was protective from experiencing relative economic deprivation (earning 70% below mean income of their reference group based on age and

occupation). Finally, Saltkjel (2018) found that persons who were never married were more likely to report material deprivation compared to married individuals. While no study has looked at the relationship between marital status and perceived scarcity directly, DeSousa and colleagues (2020) demonstrated a negative relationship between social support and perceived scarcity. Presumably, marriage would be an added source of social support for individuals and, thus, help protect against scarcity.

These previous findings make the results of studies 2 and 3 especially puzzling since they diverge from both current literature and the results from study 1. An unseen interaction effect or confounding variable is possible; however, closer examination of the demographics data reveals similar age distributions, marital status distributions, and employment distributions for the overall samples. The primary difference seen within the data is that samples 2 and 3 are composed of a greater percentage of White participants. An important but unmeasured variable that could explain these effects is number of dependents. It is possible that there is an interaction between the number of dependents and marital status in samples 2 and 3 where single participants are less likely to have dependents in their care and, in return, have less financial burden. Bernstein and colleagues (2021) found that participants with a greater number of dependents were more likely to have higher levels of financial burden and financial worry, when controlling for race and age. There are other important factors that could be influencing the results too; Robards and colleagues (2012) discuss the importance of understanding relationship quality, marital status choice, living arrangements, and marital history as they relate to outcomes such as health and well-being; however, none of these variables were measured in the included datasets.

Future studies should seek to clarify these inconsistencies as well as recruit more individuals from divorced, separated, and widowed statuses. The literature demonstrates that these backgrounds could translate into greater experiences of scarcity. For example, Whelan and Maître (2012) reported that divorced/separated/widowed individuals were more likely to face basic, material deprivation (a lack of basic resources like food, heat, clothing). Saltkjel (2018) also found that divorced/separated/widowed individuals reported higher levels of material deprivation compared to never married and married individuals.

5.5 Socioeconomic Status

Moving on to SES, the proposed hypotheses expected a negative relationship between income and overall scarcity and education and scarcity, while employment status was not expected to have a consistent meaningful effect. Results supported the hypothesis of a negative relationship between income and scarcity across studies and across forms of scarcity. Household income has a direct effect on the financial and material resources available to persons living there; furthermore, greater income is related to lowered financial stress and likely associated with more job benefits like insurance coverage (Adler & Stewart, 2010; DeNavas-Walt et al., 2013; Kaestner & Lubotsky, 2016; Kreider et al., 2016; Marks, 2007; McColl et al., 2001; Phelan et al., 2010). Those with higher income may also have access to larger and more supportive social environments, as well as better physical environments and the opportunities they bring (Adler & Stewart, 2010; Nettle, 2010; Taylor et al., 1997; Williams et al., 2008). Other studies directly corroborate the findings from the current study, with authors finding negative associations between income and all 3 forms of scarcity (DeSousa et al., 2020; DeSousa & Rego, in review).

Surprisingly, analyses showed a positive association between education and total scarcity in 2 studies which is both opposite of what was predicted and opposite of what has been found in

another study (DeSousa & Rego, in review). A second study looking at perceived scarcity found that education was negatively correlated with total scarcity, but only the psychosocial scarcity dimension contributed to this effect (DeSousa et al., 2020). Post-hoc analyses provided some potential clarification in that material scarcity was the main contributor towards the observed effects in the current study, suggesting that participants either did not get a return-on-investment for their education or that the pursuit of higher education was accompanied by loan debt (and debt burden) or higher expectations for what their material resources should be. Indeed, Velez and colleagues (2019) found that 4 years after graduation with an undergraduate degree, participants with more debt had on average higher earnings but also were more likely to have an overall negative net worth. In another large study of over 27,000 respondents, Lusardi and colleagues (2016) found that 53% of participants would change the actions they took taking out loans if could go back, 37% were behind on loan payments, and 48% expressed concern about their ability to repay their student loans.

Current literature also highlights the presence of important moderators that lead to greater student debt disparities for certain groups, which may be going unmeasured in the current study. Houle (2014) found that the availability of students' family resources and their SES background affected not just whether students went into student loan debt, but more importantly their continued debt accrual after graduation. Racial inequities also matter; Jackson and Reynolds (2013) and Scott-clayton and Li (2016) illustrated disparities between Persons of Color and White participants in the amount of student debt they hold, obtaining debt/loans and not finishing schooling, their debt increasing over time, and their risk of default on student loans. Persons of color were disadvantaged on each measure, showing that there is not only greater difficulty in obtaining resources for schooling, but that this debt can negatively impact later

financial well-being. However, it should be noted that Markle (2019) found that student financial literacy modulated participant views of debt and the financial decisions they made, with students higher in financial literacy viewing student loans as an investment and making more sound financial decisions. Unfortunately, while several racial and SES backgrounds were represented in the study, no moderation analyses based on demographics were conducted (i.e. it is unclear whether financial literacy varied by an individual's race or background).

Finally, perceived scarcity was not associated with employment status, which aligns with the original hypotheses. It should be noted, however, that the majority of participants were either employed full or part-time. Only a few participants were unemployed or retired, so conclusions cannot be drawn about scarcity for people in those categories. However, a study conducted by DeSousa and Rego (in review) had an ample number of unemployed participants (N = 139) and found that employment status was not related to overall perceived scarcity, but being unemployed was related to higher material and psychosocial scarcity and lower time scarcity compared to employed individuals. Further, as discussed earlier, retirement status may represent a time of reduction in time scarcity. Thus, the effects of employment status may be differential depending on the type of scarcity examined, as well as status of employment in conjunction with other moderating factors (e.g. number of household earners). Future studies should seek to recruit an ample number of persons with various employment background, including contract and gig workers, in order to fully understand how employment status effects scarcity and what moderates these relationships.

5.6 Subjective Social Status

The final set of hypotheses expected negative relationships between both forms of SSS (proximal and distal) and scarcity. Additionally, scarcity was expected to have a unique

relationship with income, partialing out any overlapping variance with SSS; this would support that scarcity and SSS are tapping into different (unique) constructs and reflect different measures of one's experience with their SES. The results supported the hypothesis that proximal SSS and scarcity have an inverse relationship, with stronger associations for time and psychosocial scarcity. While proximal SSS did have a negative relationship with material scarcity in one study, it is interesting that participants' ratings of themselves compared to their community were more strongly associated with their available time and psychosocial resources. Perhaps individuals of the same community are more likely to have similar material circumstances already, so the free time they appear to have or their sense of self-efficacy or the size of their peer network become differentiating factors. Unaligned with hypotheses was distal SSS's mixed relationship to scarcity, which exhibited a positive, negative, or nonsignificant relationship to scarcity depending on the study and form of scarcity. It is unclear why this is but our findings are consistent with a study by DeSousa and colleagues (2020) which also found that proximal SSS had a stronger relationship with scarcity than distal SSS.

It is important to note that the wording between the distal SSS and proximal SSS questions fundamentally differs (S. Sullivan, personal communication, August 26, 2021). The distal SSS question specifically references material circumstances compared to others in the U.S. while the proximal SSS question is both more open in its interpretation of status, and open in participants' interpretations of community. Ironically, this would seem to predict distal SSS should have a strong, negative relationship to material scarcity; it is possible that the flexibility provided by the proximal wording let factors relevant to participants emerge and these unknown factors about how one defines and ranks themselves within a community are driving the proximal SSS-scarcity relationship. In other words, participants may be rating themselves using a

system that does not depend on financial resources but however they construct this ranking is clearly important to their sense of scarcity. For example, participants may rate themselves within their community based on their social embeddedness, popularity, or status as a community leader. None of these dimensions involve financial comparison but these types of social comparisons would help explain why someone with a high proximal SSS rating would have increased psychosocial resources (and less psychosocial scarcity) as was found in the current study.

The hypothesis that scarcity's relationship with income would be largely unaffected by removing any overlapping variance with SSS was supported by both studies where scarcity had a significant correlation with income. Whether partialing out a single form or both forms of SSS, the correlation between scarcity and income remained significant and close to its original strength. This analysis was conducted because both perceived scarcity and SSS are subjective measures of participants' experiences of their SES. Given that perceived scarcity is a newly acknowledged construct, it is important to establish its construct distinctiveness from other related constructs. As introduced earlier, the SSS scale measures an individual's sense of their overall perceived social status (Adler & Stewart, 2007) and represents a synthesized interpretation of their sense of multiple socioeconomic and status indicators in their lives (Lundberg & Kristenson, 2008). However, the measure is inherently based in social comparison to specified groups and, thus, meaning and interpretation are derived from the group individuals are ranking themselves against (Callan et al., 2015). In contrast, perceived scarcity 1) measures an individual's sense of their personal resources, rather than their overall SES status, and 2) is not rooted in a sense of comparison to others but instead how an individual considers their resources, wants, and needs within their own context. These measures, then, fundamentally differ

in several ways and tap into different levels of Solar and Irwin's (2010) health model. SSS taps into an individual's subjective sense of their social determinants (a subjective 'read' on the confluence of these factors compared to others) while perceived scarcity taps into an individual's personal sense of their intermediary determinants (their take on their material, time, and psychosocial resources) (Figure 1). While both measures are subjective, this study's findings affirm these inherent differences in the constructs are present.

To conclude, interpretation of the results across these 4 studies begins to paint a picture about the layers of factors influencing perceived scarcity. Demographic variables, objective SES indicators, and SSS all seem to predict one's experience of perceived scarcity. Not only does this further our understanding of the construct but having a grasp on what influences experiences of scarcity also opens the path to exploring how to reduce individuals' experiences of scarcity (and hopefully increase wellbeing). This research also illustrates that scarcity may be experienced differently by different populations (e.g. college students, women) which is an important consideration for future researchers.

5.7 Limitations and Future Directions

Several limitations exist in this set of four studies that should be taken into account when considering findings and implications. First, all samples are secondary data and the original studies were not intentionally designed to address the research questions in this paper. This could have resulted in some participant fatigue (due to answering extra questionnaires) and also prevented the primary investigator from adding other measures that could have fleshed out relationships (e.g. occupation status, wealth, household size). For example, measures of debt to income ratio could have provided needed clarification such as understanding why education level and scarcity had a positive association. Further, the original studies were not designed to analyze

demographic differences and did not oversample these various groups. This leads to another limitation in that there was a lack of power to detect effects for some variables due to a limited sample size (e.g. fewer BIPOC participants, low gender diversity, limited employment and marital status variability).

A second limitation is that sample 3 experienced data loss issues resulting in SSS data not being collected. Having these data in a third adult sample could have provided further clarification into the relationships between scarcity and SSS. Additionally, sample 3 was all female limiting the generalizability of these findings. Similarly, sample 4 was an entirely college sample which, while providing important information about scarcity within a distinct population, must be interpreted as fundamentally different from the other samples.

Third, the data present in these studies is cross-sectional. There is no way to determine when the relationships between the variables of interest and scarcity emerged and no conclusions about whether these relationships are causal can be made. Further, the temporal stability (i.e. the stability of individuals' scores over time) of perceived scarcity has received limited research (DeSousa et al., 2020) and other study variables may also be subject to short-term temporal changes in value. Thus, some of the relationships between variables may have only been temporarily present for some participants rather than longstanding relationships (e.g. sudden job change or temporary loss of income).

Fourth, the current paper assumed linear relationships among study variables. While the data generally demonstrated normal distributions of quantitative study variables and prior research does not indicate a likelihood of nonlinear relationships, nonlinear models were still not tested against the paper's linear models to compare fit. This leaves open the possibility that nonlinear relationships may be more appropriate for some variable relationships. Residual plots

could be generated for the relationship between each independent variable and scarcity to determine whether linear analyses are the most appropriate. Relatedly, the measures of income and education were treated as interval level data, however, the appropriateness of this could be argued since the change from one category to the next is not necessarily similar in magnitude across all categories.

Fifth, the current study relied primarily on significance testing to determine whether relationships were present in the data, despite differences in sample size and power across samples. Effect size calculations could have complemented this approach by directly comparing the strengths of the found effects across samples. This would have had more equivalency when making comparisons across the samples and potentially would have shown different results and/or clarified some of the inconsistencies found between samples. Establishing the magnitudes of relationships would also allow for more precise future hypotheses.

Finally, this paper is limited in that interaction and mediation effects were not investigated. Findings regarding race and gender, alongside previous research indicate that interaction analyses may be important to fully understanding the relationships between certain variables and perceived scarcity (Brown et al., 2016; Brown-Iannuzzi et al., 2014; Shaked et al., 2016). This also represents a potential future direction wherein future research can investigate race, gender, age, and SES interactions based on previous findings regarding SES and SSS (Brown et al., 2016; Brown-Iannuzzi et al., 2014; Farmer & Ferraro, 2005; Jackson & Williams, 2006; Shaked et al., 2016; Williams et al., 2010). Research indicates that accounting for these interactions reveals important insights about why and how some group differences in status exist.

Future research can also further elaborate on the development of the perceived scarcity scale itself. For instance, research can expand on what is known about the temporal stability of

perceived scarcity to examine trends in how findings are temporally bound (e.g. how long does someone continue to have the same score or how long is a given score predictive?) and how often fluctuations occur over time (e.g. how often scarcity scores tend to change over a year period). While scores have been found to be relatively stable over a 2-month period (DeSousa et al., 2020), perceptions are likely to change as an individual's circumstances change which should be reflected in scarcity scale scores over time when/if demarcating events/transitions occur. It is important to know whether the scale reflects these changes over time to enhance construct validity. Additionally, future studies may examine the reliability of the scarcity scales and the factor clustering of scarcity domains in different target populations to provide further trust in the scale's psychometrics. This is especially important because the current paper found the scale's reliability to be particularly low in the college student sample compared to adult samples. Further, it should be ensured that reverse scored items are not introducing measurements artifacts into the scale (i.e. ensuring participants are not answering reverse coded items fundamentally differently compared to positively coded items).

Looking beyond these ideas, researchers can begin to work towards studying the association between perceived scarcity and important applied outcomes such as health and wellbeing. Perceived scarcity may very well be an important piece of the puzzle that affects individuals' experiences and sense of livelihoods. While findings hint at the potential importance of social determinants, more explicit and systematic research using a framework such as the one from Solar and Irwin (2010) should be conducted using more direct measures like macro-level data from zip codes or census tracts (e.g. housing data, green space, safety, social policies) and measures of discrimination, food availability, and more. Research on perceived scarcity

represents novel and exciting frontier for scientists exploring social inequities who seek to better understand the experiences of each participant.

REFERENCES

Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: preliminary data in healthy white women. *Health Psychology, 19*(6), 586-592.

Adler, N. E., & Rehkopf, D. H. (2008). US disparities in health: descriptions, causes, and mechanisms. *Annu. Rev. Public Health, 29*, 235-252.

Adler, N., Singh-Manoux, A., Schwartz, J., Stewart, J., Matthews, K., & Marmot, M. G. (2008). Social status and health: a comparison of British civil servants in Whitehall-II with European-and African-Americans in CARDIA. *Social Science & Medicine, 66*(5), 1034-1045.

Adler, N. E., & Snibbe, A. C. (2003). The role of psychosocial processes in explaining the gradient between socioeconomic status and health. *Current Directions in Psychological Science, 12*(4), 119-123.

Adler, N., & Stewart, J. (2007). *The MacArthur Scale of Social Status*. The John D. and Catherine T. MacArthur Research Network on SES and Health. Retrieved from http://www.macses.ucsf.edu/research/psychosocial/subjective.php.

Adler, N. E. & Stewart, J. (2010). Health disparities across the lifespan: Meaning, methods, and mechanisms. *Annals of the New York Academy of Sciences, 1186*, 5-23.

Alvarado, C. S., & Chi, C. (2016). Intersecting positions of social disadvantage and self-reported health status disparities. *Journal of Health Disparities Research and Practice, 9*(2), 11.

Arpey, N. C., Gaglioti, A. H., & Rosenbaum, M. E. (2017). How socioeconomic status affects

patient perceptions of health care: a qualitative study. *Journal of Primary Care & Community Health*, *8*(3), 169-175.

Bachmann, M. O., Eachus, J., Hopper, C. D., Davey Smith, G., Propper, C., Pearson, N. J., ... & Frankel, S. (2003). Socio-economic inequalities in diabetes complications, control, attitudes and health service use: a cross-sectional study. *Diabetic Medicine*, *20*(11), 921-929.

Baxter, J., Gray, M., Alexander, M., Strazdins, L., & Bittman, M. (2007). Mothers and fathers with young children: Paid employment, caring and wellbeing. *FaHCSIA Social Policy Research Paper*, (30).

Behncke, S. (2012). Does retirement trigger ill health?. *Health Economics*, *21*(3), 282-300.

Bernstein, D. N., Gruber, J. S., Merchan, N., Garcia, J., Harper, C. M., & Rozental, T. D. (2021). What Factors Are Associated with Increased Financial Burden and High Financial Worry For Patients Undergoing Common Hand Procedures?. *Clinical Orthopaedics and Related Research®*, *479*(6), 1227-1234.

Bianchi, S. M. (2000). Maternal employment and time with children: Dramatic change or surprising continuity?. *Demography*, *37* (4), 401-414.

Bickel, W. K., Moody, L., Quisenberry, A. J., Ramey, C. T., & Sheffer, C. E. (2014). A competing neurobehavioral decision systems model of SES-related health and behavioral disparities. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, *68*, 37–43.

Bisom-Rapp, S., & Sargeant, M. (2014). It's complicated: age, gender, and lifetime discrimination against working women-the United States and the UK as examples. *Elder LJ*, *22*(1).

Bleiweis, R. (2020). https://www.americanprogress.org/issues/women/reports/2020 /03/24/ 482141/quick-facts-gender-wage-gap/

Bradbury, K. L. (2002). Education and wages in the 1980s and 1990s: Are all groups moving up together?. *New England Economic Review*, 19-46.

Braveman, P. A., Cubbin, C., Egerter, S., Chideya, S., Marchi, K. S., Metzler, M., & Posner, S. (2005). Socioeconomic status in health research: One size does not fit all. *Journal of the American Medical Association, 294*(22), 2879-2888.

Brown, T. H., Richardson, L. J., Hargrove, T. W., & Thomas, C. S. (2016). Using multiple-hierarchy stratification and life course approaches to understand health inequalities: The intersecting consequences of race, gender, SES, and age. *Journal of Health and Social Behavior*, *57*(2), 200-222.

Brown-Iannuzzi, J. L., Payne, B. K., Rini, C., DuHamel, K .N., & Redd, W. H. (2014). Objective and subjective socioeconomic status an health symptoms in patients following hematopoietic stem cell transplantation. *Psychooncology, 23*(7), 740-748.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2016). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality data?. In A. E. Kazdin (Ed.), *Methodological Issues and Strategies in Clinical Research* (pp. 133–139). American Psychological Association. https://doi.org/10.1037/14805-009

Callan, M. J., Kim, H., & Matthews, W. J. (2015). Predicting self-rated mental and physical health: The contributions of subjective socioeconomic status and personal relative deprivation. *Frontiers in Psychology, 6*: 1415. *doi: 10.3389/fpsyg.2015.01415*

Chen, E., Martin, A. D., & Matthews, K. A. (2006). Understanding health disparities: The role of

race and socioeconomic status in children's health. *American Journal of Public Health, 96*(4), 702-708.

Cohen, S., Alper, C. M., Doyle, W. J., Adler, N., Treanor, J. J., & Turner, R. B. (2008). Objective and subjective socioeconomic status and susceptibility to the common cold. *Health Psychology, 27*(2), 268.

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum*, 1989(8), 139–167.

Cummings, J. L., & Braboy Jackson, P. (2008). Race, gender, and SES disparities in self-assessed health, 1974-2004. *Research on Aging, 30*(2), 137-167.

Cundiff, J. M., Smith, T. W., Uchino, B. N., & Berg, C. A. (2013). Subjective social status: construct validity and associations with psychosocial vulnerability and self-rated health. *International Journal of Behavioral Medicine, 20*(1), 148-158.

Cundiff, J. M., & Matthews, K. A. (2017). Is subjective social status a unique correlate of physical health? A meta-analysis. *Health Psychology, 36*(12), 1109–1125. https://doi.org/10.1037/hea0000534

Demakakos, P., Nazroo, J., Breeze, E., & Marmot, M. (2008). Socioeconomic status and health: The role of subjective social status. *Social Science & Medicine, 67*(2), 330-340.

DeMatteo, M. (2021). https://www.cnbc.com/select/average-net-worth-by-age/

DeNavas-Walt, C., Proctor, B. D., & Smith, J. C. (2013). Income, Poverty, and Health Insurance Coverage in the United States: 2012. Current Population Reports P60-245. *US Census Bureau*.

DeSousa, M., Peterman, A. & Reeve, C. (2018). An initial model of scarcity. *Qualitative*

Psychology, 5(1), 59-76.

DeSousa, M., Reeve, C.L., Peterman, A.H. (2020). Development and initial validation of the Perceived Scarcity Scale. *Stress and Health*, 1–16. https://doi.org/10.1002/smi.2908

Douthitt, R. A. (2000). "Time to do the chores?" Factoring home-production needs into measures of poverty. *Journal of Family and Economic Issues*, *21*(1), 7-22.

Ekerdt, D. J., & Koss, C. (2016). The task of time in retirement. *Ageing & Society*, *36*(6), 1295-1311.

Fan, L., & Babiarz, P. (2019). The determinants of subjective financial satisfaction and the moderating roles of gender and marital status. *Family and Consumer Sciences Research Journal*, *47*(3), 237-259.

Farmer, M. M. & Ferraro, K. F. (2005). Are racial disparities in health conditional on socioeconomic status? *Social Science & Medicine, 60*, 191-204.

Franzini, L. & Fernandez-Esquer, M. E. (2006). The association of subjective social status and health in low-income Mexican-origin individuals in Texas. *Social Science & Medicine, 63*(3), 788-804.

Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: do negative emotions play a role?. *Psychological Bulletin*, *129*(1), 10-51. https://doi.org/10.1037/0033-2909.129.1.10

Gallo, L. C., Bogart, L. M., Vranceanu, A. M., & Matthews, K. A. (2005). Socioeconomic status, resources, psychological experiences, and emotional responses: A test of the reserve capacity model. *Journal of Personality and Social Psychology*, *88*(2), 386.

Gallo, L. C., de Los Monteros, K. E., & Shivpuri, S. (2009). Socioeconomic status and health:

What is the role of reserve capacity?. *Current Directions in Psychological Science*, *18*(5), 269–274.

Garza, J. R., Glenn, B. A., Mistry, R. S., Ponce, N. A., & Zimmerman, F. J. (2017). Subjective social status and self-reported health among US-born and immigrant Latinos. *Journal of Immigrant and Minority Health*, *19*(1), 108-119.

Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of Mechanical Turk samples. *Journal of Behavioral Decision Making*, *26*(3), 213-224.

Gray, A. M. (1982). Inequalities in health. The Black Report: A summary and comment. *International Journal of Health Services*, *12*(3), 349-380.

Greenwald, H. P., Polissar, N. L., & Dayal, H. H. (1996). Race, socioeconomic status and survival in three female cancers. *Ethnicity & Health*, *1*(1), 65-75.

Griskevicius, V., Ackerman, J. M., Cantú, S. M., Delton, A. W., Robertson, T. E., Simpson, J. A., ... & Tybur, J. M. (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environments. *Psychological Science*, *24*(2), 197-205.

Hansen, T., Slagsvold, B., & Moum, T. (2008). Financial satisfaction in old age: A satisfaction paradox or a result of accumulated wealth?. *Social Indicators Research*, *89*(2), 323-347.

Heflin, C. M., & Iceland, J. (2009). Poverty, material hardship, and depression. *Social Science Quarterly, 90*, 1051–1071

Henager, R., & Wilmarth, M. J. (2018). The relationship between student loan debt and financial wellness. *Family and Consumer Sciences Research Journal*, *46*(4), 381-395.

Hochschild, A. R., & Machung, A. (2003). The second shift. New York: Penguin Books.

Houle, J. N. (2014). Disparities in debt: Parents' socioeconomic resources and young adult student loan debt. *Sociology of Education, 87*(1), 53-69.

Jabs, J., & Devine, C.M. (2006). Time scarcity and food choices: An overview. *Appetite, 47*(2), 196-204.

Jackson, B. A., & Reynolds, J. R. (2013). The price of opportunity: Race, student loan debt, and college achievement. *Sociological Inquiry*, *83*(3), 335-368.

Kaestner, R., & Lubotsky, D. (2016). Health insurance and income inequality. *Journal of Economic Perspectives*, *30*(2), 53-78.

Kawachi, I., Daniels, N., & Robinson, D. E. (2005). Health disparities by race and class: Why both matter. *Health Affairs, 24*(2), 343-352.

Kendi, I. X. (2016). *Stamped from the beginning: The definitive history of racist ideas in America*. Hachette, UK.

Kessler, D., & Wolff, E. N. (1991). A comparative analysis of household wealth patterns in France and the United States. *Review of Income and Wealth*, *37*(3), 249-266.

Kingston, S. (2013). Economic adversity and depressive symptoms in mothers: Do marital status and perceived social support matter?. *American Journal of Community Psychology*, *52*(3-4), 359-366.

Kino, S., & Kawachi, I. (2020). How much do preventive health behaviors explain education-and income-related inequalities in health? Results of Oaxaca–Blinder decomposition analysis. *Annals of Epidemiology*, *43*, 44-50.

Kreider, A. R., French, B., Aysola, J., Saloner, B., Noonan, K. G., & Rubin, D. M. (2016). Quality of health insurance coverage and access to care for children in low-income families. *JAMA pediatrics*, *170*(1), 43-51.

Kristenson, M., Eriksen, H. R., Sluiter, J. K., Starke, D., & Ursin, H. (2004). Psychobiological mechanisms of socioeconomic differences in health. *Social Science & Medicine, 58*(8), 1511-1522.

Kwate, N. O., & Goodman, M. S. (2015). Racism at the intersections: Gender and socioeconomic differences in the experience of racism among African Americans. *American Journal of Orthopsychiatry*, 85, 397–408. doi:10.1037/ort0000086

Lee, R. E., Cubbin, C., & Winkleby, M. (2007). Contribution of neighbourhood socioeconomic status and physical activity resources to physical activity among women. *Journal of Epidemiology & Community Health, 61*(10), 882-890.

Lorant, V., Deliège, D., Eaton, W., Robert, A., Philippot, P., & Ansseau, M. (2003). Socioeconomic inequalities in depression: a meta-analysis. *American Journal of Epidemiology*, *157*(2), 98-112.

Lundberg, J., & Kristenson, M. (2008). Is subjective status influenced by psychosocial factors?. *Social Indicators Research, 89*(3), 375. https://doi.org/10.1007/s11205-008-9238-3

Lusardi, A., de Bassa Scheresberg, C., & Oggero, N. (2016). Student loan debt in the US: An analysis of the 2015 NFCS data. From Global Financial Literacy Excellence Center, *Policy Brief: November 2016*.

Markle, G. (2019). Crushing debt or savvy strategy? Financial literacy and student perceptions of their student loan debt. *Journal of Student Financial Aid*, *49*(1), 4.

Marks, G. N. (2007). Income poverty, subjective poverty and financial stress. *Australian Government Social Policy Research Paper*, (29).

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function.

Science, 341, 976 –980

Manstead, A. S. (2018). The psychology of social class: How socioeconomic status impacts thought, feelings, and behaviour. *British Journal of Social Psychology*, *57*(2), 267-291.

Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, *365*(9464), 1099-1104.

Matthews, K. A., & Gallo, L. C. (2011). Psychological perspectives on pathways linking socioeconomic status and physical health. *Annual review of psychology*, *62*, 501-530.

McColl, B., Pietsch, L., & Gatenby, J. (2001). *Household income, living standards and financial stress*. Australian Bureau of Statistics.

McLeod, J. D., & Owens, T. J. (2004). Psychological well-being in the early life course: Variations by socioeconomic status, gender, and race/ethnicity. *Social Psychology Quarterly*, *67*(3), 257-278.

McKernan, S. M., Ratcliffe, C., Steuerle, C. E., & Zhang, S. (2013). *Less than equal: Racial disparities in wealth accumulation*. Washington, DC: Urban Institute.

Miyakawa, M., Hanson, L. L., Theorell, T., Westerlund, H. (2012). Subjective social status: its determinants and association with health in the Swedish working population (the SLOSH study). *European Journal of Public Health, 22*(4), 593–597. https://doi.org/10.1093/eurpub/ckr064

Mortelmans, D., & Jansen, M. (2010). Income dynamics after divorce: A latent growth model of income change on the European Community Household Panel. *Brussels Economic Review*, *53*(1), 85-107.

Mortensen, K., & Hughes, T. L. (2018). Comparing Amazon's Mechanical Turk platform to

conventional data collection methods in the health and medical research literature. *Journal of General Internal Medicine, 33*(4), 533-538.

Mullainathan, S., & Shafir, E. (2013). *Scarcity: Why having too little means so much*. New York, NY: Times Books.

Nettle, D. (2010). Why are there social gradients in preventative health behavior? A perspective from behavioral ecology. *PLoS One, 5*(10), e13371.

Oakes, J. M. & Rossi, P. H. (2003). The measurement of SES in health research: Current practice and steps toward a new approach. *Social Science and Medicine, 56*(4), 769-784.

Operario, D., Adler, N. E., & Williams, D. R. (2004). Subjective social status: Reliability and predictive utility for global health. *Psychology & Health*, *19*(2), 237-246.

Ortiz, S. Y., & Roscigno, V. J. (2009). Discrimination, women, and work: Processes and variations by race and class. *The Sociological Quarterly*, *50*(2), 336-359.

Oshio, T., & Kan, M. (2017). The dynamic impact of retirement on health: Evidence from a nationwide ten-year panel survey in Japan. *Preventive Medicine*, *100*, 287-293.

Ostrove, J. M., Adler, N. E., Kuppermann, M., & Washington, A. E. (2000). Objective and subjective assessments of socioeconomic status and their relationship to self-rated health in an ethnically diverse sample of pregnant women. *Health Psychology*, *19*(6), 613-618.

Ou, S. H. I., Zell, J. A., Ziogas, A., & Anton-Culver, H. (2008). Low socioeconomic status is a poor prognostic factor for survival in stage I nonsmall cell lung cancer and is independent of surgical treatment, race, and marital status. *Cancer, 112*(9), 2011-2020.

Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding Mechanical Turk as a participant pool. *Current Directions in Psychological Science, 23*(3), 184-188.

Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social conditions as fundamental causes of

health inequalities: theory, evidence, and policy implications. *Journal of Health and Social Behavior, 51*(1_suppl), S28-S40.

Präg, P., Mills, M. C., & Wittek, R. (2016). Subjective socioeconomic status and health in cross-national comparison. *Social Science & Medicine, 149*, 84-92.

Quinones, P. A., Kirchberger, I., Heier, M., Kuch, B., Trentinaglia, I., Mielck, A., ... & Meisinger, C. (2014). Marital status shows a strong protective effect on long-term mortality among first acute myocardial infarction-survivors with diagnosed hyperlipidemia–findings from the MONICA/KORA myocardial infarction registry. *BMC Public Health, 14*(1), 1-10.

Quon, E. C., & McGrath, J. J. (2014). Subjective socioeconomic status and adolescent health: A meta-analysis. *Health Psychology, 33*(5), 433.

Reitzel, L. R., Mazas, C. A., Cofta-Woerpel, L., Vidrine, J. I., Businelle, M. S., Kendzor, D. E., Li, Y., Cao, Y., & Wetter, D. W. (2010). Acculturative and neighborhood influences on subjective social status among Spanish-speaking Latino immigrant smokers. *Social Science & Medicine, 70*(5), 677–683. https://doi.org/10.1016/j.socscimed.2009.11.024

Reitzel, L. R., Nguyen, N., Strong, L. L., Wetter, D. W., & McNeill, L. H. (2013). Subjective social status and health behaviors among African Americans. *American Journal of Health Behavior, 37*(1), 104–111. https://doi.org/10.5993/AJHB.37.1.12

Rendall, M. S., Weden, M. M., Favreault, M. M., & Waldron, H. (2011). The protective effect of marriage for survival: A review and update. *Demography, 48*(2), 481-506.

Roberge, R., Berthelot, J. M., & Wolfson, M. (1995). The Health Utility Index: Measuring health differences in Ontario by socioeconomic status. *Health Reports, 7*(2), 25-32.

Robinson, J. P., & Godbey, G. (1999). *Time for life: The surprising ways Americans use their*

time. University Park, PA: Pennsylvania State University Press.

Roxburgh, S. (2012). Parental time pressures and depression among married dual-earner parents. *Journal of Family Issues, 33,* 1027–1053. http://dx .doi.org/10.1177/0192513x11425324

Saltkjel, T. (2018). Welfare resources and social risks in times of social and economic change: A multilevel study of material deprivation in European countries. *European Journal of Social Work*, *21*(5), 639-652.

Sayer, L. C. (2001). *Time use, gender and inequality: Differences in men's and women's market, nonmarket, and leisure time.* Doctoral dissertation, University of Maryland, College Park.

Scott-Clayton, J., & Li, J. (2016). Black-white disparity in student loan debt more than triples after graduation. *Economic Studies, Volume 2 No. 3*.

Senn, T. E., Walsh, J. L., & Carey, M. P. (2014). The mediating roles of perceived stress and health behaviors in the relation between objective, subjective, and neighborhood socioeconomic status and perceived health. *Annals of Behavioral Medicine*, *48*(2), 215-224.

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science, 338,* 682– 685.

Shaked, D., Williams, M., Evans, M. K., & Zonderman, A. B. (2016). Indicators of subjective social status: Differential associations across race and sex. *SSM - population health*, *2*, 700–707. doi:10.1016/j.ssmph.2016.09.009

Shavers, V. L. (2007). Measurement of socioeconomic status in health disparities research. *Journal of the National Medical Association, 99*(9), 1013-1023.

Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: Its

determinants and its association with measures of ill-health in the Whitehall II study. *Social Science & Medicine, 56*(6), 1321-1333.

Solar, O., & Irwin, A. (2010). *A conceptual framework for action on the social determinants of health*. WHO Document Production Services. https://apps.who.int/iris/bitstream/handle/10665/44489/?sequence=1

Stenholm, S., Pulakka, A., Kawachi, I., Oksanen, T., Halonen, J. I., Aalto, V., ... & Vahtera, J. (2016). Changes in physical activity during transition to retirement: A cohort study. *International Journal of Behavioral Nutrition and Physical Activity, 13*(1), 1-8.

Strazdins, L., Lucas, N., Shipley, M., Mathews, B., Berry, H. L., Rodgers, B., & Davies, A. (2012). Parent and child wellbeing and the influence of work and family arrangements: A three cohort study. *FaHCSIA Social Policy Research Paper*, (44). https://ssrn.com/abstract=2185703

Strazdins, L., Welsh, J., Korda, R., Broom, D., & Paolucci, F. (2016). Not all hours are equal: Could time be a social determinant of health?. *Sociology of Health & Illness, 38*(1), 21-42.

Subramanyam, M. A., Diez-Roux, A. V., Hickson, D. A., Sarpong, D. F., Sims, M., Taylor Jr, H. A., ... & Wyatt, S. B. (2012). Subjective social status and psychosocial and metabolic risk factors for cardiovascular disease among African Americans in the Jackson Heart Study. *Social Science & Medicine, 74*(8), 1146-1154.

Taylor, S. E., Repetti, R. L., & Seeman, T. (1997). Health psychology: what is an unhealthy environment and how does it get under the skin?. *Annual Review of Psychology, 48*(1), 411-447.

Tucker-Seeley, R. D., Harley, A. E., Stoddard, A. M., & Sorensen, G. G. (2013). Financial

hardship and self-rated health among low-income housing residents. *Health Education Behavior*, 40, 422-448.

Velez, E., Cominole, M., & Bentz, A. (2019). Debt burden after college: the effect of student loan debt on graduates' employment, additional schooling, family formation, and home ownership. *Education Economics*, *27*(2), 186-206.

Wainscoat, B. (2021). *What are the tax benefits of marriage?* Personal Capital. https://www.personalcapital.com/blog/taxes-insurance/tax-benefits-of-marriage/

Watson, J. M., Scarinci, I. C., Klesges, R. C., Slawson, D., & Beech, B. M. (2002). Race, socioeconomic status, and perceived discrimination among healthy women. *Journal of Women's Health & Gender-based Medicine, 11*(5), 441-451.

Williams, D. R. (1999). Race, socioeconomic status, and health: The added effects of racism and discrimination. *Annals of the New York Academy of Sciences, 896*(1), 173-188.

Williams, D. R. & Collins, C. (1995). U.S. socioeconomic and racial differences in health: Patterns and explanations. *Annual Review of Sociology, 21,* 349-386.

Williams, D. R. & Collins, C. (2001). Racial residential segregation: A fundamental cause of racial disparities in health. *Public Health Reports, 116,* 404-416.

Williams, D. R., Costa, M. V., Odunlami, A. O., & Mohammed, S. A. (2008). Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *Journal of Public Health Management and Practice: JPHMP*, *14*(Suppl), S8.

Williams, S. L., & Mann, A. K. (2017). Sexual and gender minority health disparities as a social issue: How stigma and intergroup relations can explain and reduce health disparities. *Journal of Social Issues*, *73*(3), 450-461.

Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine*, *32*(1), 20-47.

Williams, D. R., Priest, N., & Anderson, N. B. (2016). Understanding associations among race, socioeconomic status, and health: Patterns and prospects. *Health Psychology*, *35*(4), 407–411. https://doi.org/10.1037/hea0000242

Wiltshire, J. C., Roberts, V., Brown, R., & Sarto, G. E. (2009). The effects of socioeconomic status on participation in care among middle-aged and older adults. *Journal of Aging and Health*, *21*(2), 314-335.

Whelan, C. T., & Maître, B. (2012). Understanding material deprivation: A comparative European analysis. *Research in Social Stratification and Mobility*, *30*(4), 489-503.

Wolff, L. S., Acevedo-Garcia, D., Subramanian, S. V., Weber, D., & Kawachi, I. (2010). Subjective social status, a new measure in health disparities research: Do race/ethnicity and choice of referent group matter?. *Journal of Health Psychology*, *15*(4), 560-574.

Yngwe, M. Å., Fritzell, J., Lundberg, O., Diderichsen, F., & Burström, B. (2003). Exploring relative deprivation: is social comparison a mechanism in the relation between income and health?. *Social Science & Medicine*, *57*(8), 1463-1473.

Zell, E., Strickhouser, J. E., & Krizan, Z. (2018). Subjective social status and health: A meta-analysis of community and society ladders. *Health Psychology*, *37*(10), 979. https://doi.org/10.1037/hea0000667

Zuzanek, J. (2004). Work, leisure, time pressure and stress. In J.T. Haworth & A. J. Veal (Eds.), *Work and Leisure* (pp. 123-144). New York: Routledge.

APPENDIX A: LIST OF MEASURES

Age

1. What is your age?

Gender

Study 1:

2. Gender:
    a. Male
    b. Female
    c. Other

Studies 2, 3, and 4:

2. Which best describes your current gender identity?
    a. Woman
    b. Man
    c. Trans Woman
    d. Trans Man
    e. Gender Queer
    f. Gender nonconforming
    g. Gender Fluid
    h. Non-Binary
    i. Self-Identify: _____
    j. Prefer not to disclose

Race

Study 1:

3. Which of the following groups would you say best represents your race?
    a. African American/Black
    b. Asian
    c. European American/White
    d. Latino/Hispanic
    e. Native American
    f. Other

Study 2, 3, and 4:

3. Which of the following groups would you say best represents your race (check all that apply):
    a. White or European American
    b. Black or African American or Afro Caribbean
    c. Hispanic, Latino, or Spanish origin
    d. East Asian or East Asian American
    e. Native Hawaiian or Other Pacific Islander
    f. Native American or Alaska Native or First Nations
    g. Middle Eastern or Arab American or North African
    h. South Asian or South Asian American

i. Multiracial/Biracial (please check all that apply)
j. Other (please specify): _____

Marital Status

4. What is your marital status?
    k. Single and never married
    l. Married
    m. Common law marriage
    n. In a relationship
    o. Separated
    p. Divorced
    q. Widowed

Education

5. What is the highest level of education you have completed
    a. Less than High School
    b. High school, not currently in college or tech school
    c. High school, currently in college/tech school
    d. Associate Degree (or other two-year degree)
    e. Bachelor's degree, not currently in grad school
    f. Bachelor's degree, currently in grad school
    g. Master's Degree
    h. Terminal Degree (e.g. PhD, MD, JD)

Income

6. Which of the following categories best describes your pre-tax household income (USD) in the last year?
    a. Less than 10,000
    b. 10,000 to 14,999
    c. 15,000 to 19,000
    d. 20,000 to 24,999
    e. 25,000 to 29,000
    f. 30,000 to 39,999
    g. 40,000 to 49,999
    h. 50,000 to 74,999
    i. 75,000 to 99,999
    j. 100,000 to 149,999
    k. Greater than 150,000

Employment Status

7. What is your current occupation status?
    a. Employed full time
    b. Employed part time
    c. Not employed outside the home but looking for a job
    d. Not employed outside the home and not looking for a job
    e. Retired

f. Student
g. Disabled

Perceived Scarcity Scale. The Scarcity Scale (De Sousa, 2015) is a 24-item self-report questionnaire that measures an individual's experience of scarcity. Participants respond to a series of statements on a scale of 1 (strongly disagree) to 5 (strongly agree). The scale as a whole has been reported to have good internal consistency ($\alpha = .94$), as do the three subscales that compose it: time scarcity ($\alpha = .93$; eg., "I have enough time to get done what needs to get done for my family"), psychological resource scarcity ($\alpha = .88$; eg., "If there is something I need to know, I know who to ask for help or where to look up the information"), and material scarcity ($\alpha = .89$; e.g., "I have had to borrow money from family or friends to pay my bills"; De Sousa, 2015).

Please choose the response that best corresponds with how much you agree or disagree with each statement.

		Strongly Disagree (1)	Disagree (2)	Neither Agree or Disagree (3)	Agree (4)	Strongly Agree (5)
1.	I have had to move in with friends/family because I could not afford to live on my own.					
2.	I have enough time to meet all of my responsibilities.					
3.	I do not have health insurance because it is not offered, I am unemployed, and/or I cannot afford to purchase it.					
4.	There are people I can talk to when I have a problem.					
5.	If I were unable to provide for myself, there are people in my life who would help me make ends meet.					
6.	I have had to borrow money from family or friends to pay my bills.					
7.	I have enough time to exercise.					
8.	I have enough knowledge to succeed in my profession/classes.					
9.	Even though I am able to get done what needs to get done, I often feel like I do not have enough time.					
10.	I go hungry because I cannot afford to buy more food.					
11.	I have more to do than I have time to do it in.					
12.	I have had my utilities (ex. heat, water, etc.) turned off because I could not pay my bill.					
13.	I am confident in my ability to make good choices for myself.					
14.	I have not sought the health/medical care I needed because I could not afford it.					

15.	I have enough time to cook healthy meals.					
16.	I have meaningful relationships in my life.					
17.	I have enough time to engage in hobbies or engage in activities I enjoy.					
18.	I have had my phone turned off because I could not pay my bill on time.					
19.	I have the knowledge and/or skills to achieve my goals.					
20.	I have enough time to get done what needs to get done for work/school.					
21.	I buy less nutritious foods because I cannot afford healthier options.					
22.	I have enough time to spend with family/friends.					
23.	There are people in my life I can go to for support when I need it.					
24.	If there is something I need to know, I know who to ask for help or where to look up the information.					

The following items are reverse scored: 2, 4, 5, 7, 8, 13, 15, 16, 17, 19, 20, 22, 23, 24

The full scale and subscales should be mean scored.

Perceived Material Scarcity Subscale items: 1, 3, 6, 10, 12, 14, 18, 21
Perceived Time Scarcity Subscale items: 2, 7, 9, 11, 15, 17, 20, 22
Perceived Psychosocial Resources Scarcity Subscale items: 4, 5, 8, 13, 16, 19, 23, 24

Subjective social status (SSS). The *MacArthur Scale of Subjective Social Status* (Adler & Stewart, 2007) consisted of two items in which participants were asked to indicate their placement on a ten-rung ladder relative to American society as a whole (distal comparison), and relative to their community (proximal comparison). Scores ranges from 0 to 10 for both items.

Instructions: Think of this ladder as representing where people stand in the United States. At the **top** of the ladder are the people who are the best off – those who have the most money, the most education, and the most respected jobs. At the **bottom** are the people who are the worst off – those who have the least money, least education, the least respected jobs, or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

Where would you place yourself on this ladder?
Please place a large **"X"** on the rung where you think you stand at this time in your life relative to other people in the United States.

Instructions: Think of this ladder as representing where people stand in their communities. People define community in different ways; please define it in whatever way is most meaningful to you. At the **top** of the ladder are people who have the highest standing in their community. At the **bottom** are the people who have the lowest standing in their community.

Where would you place yourself on this ladder?
Please place a large **"X"** on the rung where you think you stand at this time in your life relative to other people in your community.

APPENDIX B: PARTICIPANT CHARACTERISTICS ACROSS SAMPLES

Frequency Statistics Among Study Variables, Across Samples

		Study 1	**Study 2**	**Study 3**	**Study 4**
Variable	Categories	Frequency (Percent)			
Gender	Male	182 (52%)	76 (51%)	NC	82 (49%)
	Female	165 (48%)	71 (48%)	264 (100%)	80 (48%)
	Trans Woman	NC	1 (1%)	--	--
	Gender Nonconforming	NC	--	--	1 (.5%)
	Non-Binary	NC	--	--	3 (2%)
	Rather Not Say	NC	--	--	1 (.5%)
Race	Black	24 (7%)	19 (12.8%)	45 (17%)	27 (16%)
	Asian American	16 (5%)	NC	NC	NC
	Latinx	71 (20%)	6 (4%)	18 (7%)	20 (12%)
	Native American	3 (1%)	--	8 (3%)	--
	White	226 (65%)	116 (78%)	188 (71%)	99 (59%)
	East Asian	NC	--	11 (4%)	10 (6%)
	South Asian	NC	5 (3%)	13 (5%)	13 (8%)
	Pacific Islander	NC	1 (1%)	3 (1%)	--
	MENA	NC	1 (1%)	3 (1%)	3 (2%)
	Multiracial	7 (2%)	--	3 (1%)	NC
	Other	--	4 (3%)	2 (1%)	2 (1%)
Marital Status	Single	136 (39%)	57 (39%)	104 (39%)	NC
	Married	184 (53%)	70 (47%)	160 (61%)	NC

	Separated	4 (1%)	2 (1%)	NC	NC
	Divorced	20 (6%)	17 (12%)	NC	NC
	Widowed	3 (1%)	2 (1%)	NC	NC
Employment Status	Full-time	243 (70%)	124 (84%)	222 (84%)	NC
	Part-time	54 (16%)	14 (10%)	14 (5%)	NC
	Unemployed	50 (14%)	4 (3%)	16 (6%)	NC
	Retired	NC	4 (3%)	5 (2%)	NC
	Student	NC	4 (3%)	5 (2%)	NC
	Disabled	NC	1 (1%)	2 (1%)	NC
Household Income	Range	<$10k - $500k<	<$10k - $150k<	<$10k - $150k<	<$10k - $150k<
	Average Income	$30k - $40k	$30k - $40k	$40k - $50k	$50-$75k
Education (Study 4 = Parental Edu.)	Range	Less than HS – Terminal Degree	HS – Terminal Degree	Less than HS – Terminal Degree	Less than HS – Terminal Degree
	Modal Education	Bachelor's Degree	Bachelor's Degree	Bachelor's Degree	Bachelor's Degree

Note. Study 1 *N* = 347; Study 2 *N* = 148; Study 3 *N* = 264; Study 4 *N* = 167. "--" = no participants in this category. NC = Data/category not collected in the study. MENA = Middle Eastern or North African. Unemployed includes: not employed by choice; not employed, but actively looking for work; and not employed, not by choice, but not actively seeking employment.

APPENDIX C: SCARCITY SCALE INTERCORRELATIONS ACROSS SAMPLES

Scarcity Scale Correlations: Sample 1

Variable	1	2	3	4
1. Total Perceived Scarcity	--			
2. Material Scarcity	**.77****	--		
3. Time Scarcity	**.81****	**.35****	--	
4. Psychosocial Scarcity	**.74****	**.34****	**.55****	--

Note. $N = 347$. * $p < .05$. ** $p < .01$. Total perceived scarcity scores range from 24 to 120. Domain scores range from 8 to 40.

Scarcity Scale Correlations: Sample 2

Variable	1	2	3	4
1. Total Perceived Scarcity	--			
2. Material Scarcity	**.82****	--		
3. Time Scarcity	**.83****	**.43****	--	
4. Psychosocial Scarcity	**.77****	**.32****	**.69****	--

Note. $N = 148$. * $p < .05$. ** $p < .01$. Total perceived scarcity scores range from 24 to 120. Domain scores range from 8 to 40.

Scarcity Scale Correlations: Sample 3

Variable	1	2	3	4
1. Total Perceived Scarcity	--			
2. Material Scarcity	**.77****	--		
3. Time Scarcity	**.61****	.03	--	
4. Psychosocial Scarcity	**.58****	.04	**.57****	--

Note. $N = 264$. * $p < .05$. ** $p < .01$. Total perceived scarcity scores range from 24 to 120. Domain scores range from 8 to 40.

Scarcity Scale Correlations: Sample 4

Variable	1	2	3	4
1. Total Perceived Scarcity	--			
2. Material Scarcity	**.64****	--		
3. Time Scarcity	**.73****	.05	--	
4. Psychosocial Scarcity	**.80****	**.34****	**.49****	--

Note. $N = 167$. * $p < .05$. ** $p < .01$. Total perceived scarcity scores range from 24 to 120. Domain scores range from 8 to 40.

APPENDIX D: CROSS SAMPLE COMPARISONS OF RESULTS

Cross-Sample Comparison of Results: Variables Associated with Total Perceived Scarcity

	Study 1: General Population	Study 2: Primary Care	Study 3: All Female	Study 4: College Students
Variable	**Significance and Nature of Relationship**			
Race	NS	Black participants lower avg. scarcity	Black participants higher avg. scarcity	NS
Gender	Female participants higher avg. scarcity	NS	--	Female participants higher avg. scarcity
Marital Status	Single participants higher avg. scarcity	NS	NS	--
Age	Negative	NS	Negative	NS
Employment Status	NS	NS	NS	--
Household Income	Negative	Negative	Negative	NS
Education	NS	Positive	Positive	NS
Parental Education	--	--	--	Trended Negative
Distal SSS	Trended Positive	Positive	--	Negative
Proximal SSS	Negative	Negative	--	Negative

Note. Study 1 *N* = 347; Study 2 *N* = 148; Study 3 *N* = 264; Study 4 *N* = 167. NS = Not Statistically Significant. "--" = data not collected.

*Cross-Sample Comparison of Results: Variables Associated with **Material** Scarcity*

	Study 1: General Population	Study 2: Primary Care	Study 3: All Female	Study 4: College Students
Variable	**Significance and Nature of Relationship**			
Race	NS	NS	Black participants higher avg. scarcity	NS
Gender	NS	NS	--	NS
Marital Status	Single participants higher avg. scarcity	Single participants less avg. scarcity	Single participants less avg. scarcity	--
Age	Negative	Negative	Negative	NS
Employment Status	NS	NS	NS	--
Household Income	Negative	Negative	Negative	Negative
Education	NS	Positive	Positive	NS
Parental Education	--	--	--	NS
Distal SSS	Trended Positive	Positive	--	NS
Proximal SSS	Negative	NS	--	NS

Note. Study 1 *N* = 347; Study 2 *N* = 148; Study 3 *N* = 264; Study 4 *N* = 167. NS = Not Statistically Significant. "--" = data not collected.

*Cross-Sample Comparison of Results: Variables Associated with **Time** Scarcity*

	Study 1: General Population	Study 2: Primary Care	Study 3: All Female	Study 4: College Students
Variable	**Significance and Nature of Relationship**			
Race	NS	Black participants lower avg. scarcity	NS	NS
Gender	Female participants higher avg. scarcity	NS	--	Female participants higher avg. scarcity
Marital Status	Single participants higher avg. scarcity	NS	NS	--
Age	NS	NS	Negative	NS
Employment Status	NS	NS	NS	--
Household Income	Negative	Negative	NS	NS
Education	NS	NS	NS	NS
Parental Education	--	--	--	NS
Distal SSS	NS	Positive	--	NS
Proximal SSS	Negative	Negative	--	Negative

Note. Study 1 *N* = 347; Study 2 *N* = 148; Study 3 *N* = 264; Study 4 *N* = 167. NS = Not Statistically Significant. "--" = data not collected.

*Cross-Sample Comparison of Results: Variables Associated with **Psychosocial** Scarcity*

	Study 1: General Population	Study 2: Primary Care	Study 3: All Female	Study 4: College Students
Variable	**Significance and Nature of Relationship**			
Race	NS	Black participants lower avg. scarcity	NS	NS
Gender	NS	NS	--	NS
Marital Status	Single participants higher avg. scarcity	NS	NS	--
Age	Negative	NS	Negative	NS
Employment Status	NS	NS	NS	--
Household Income	Negative	Negative	Negative	NS
Education	NS	NS	NS	NS
Parental Education	--	--	--	NS
Distal SSS	NS	NS	--	Negative
Proximal SSS	Negative	Negative	--	NS

Note. Study 1 *N* = 347; Study 2 *N* = 148; Study 3 *N* = 264; Study 4 *N* = 167. NS = Not Statistically Significant. "--" = data not collected.