Supplement Materials

Supplement 1a: Literature Related to the Moderator Variables

Demographic Moderators

Research indicates that the impact of SES on individuals' lives varies across developmental stages and educational level (e.g., [1,2]). Hence, a primary goal of this meta-analysis is to explore the relationship between SES and self-concept throughout a student's developmental journey. Previous studies have shown a linear declining role of age in self-concept (e.g., [3,4]). Most research suggesting that the association between SES and self-concepts weakens with age has relied on longitudinal data where SES was measured only during the first phase/wave of the study, while self-concept was assessed repeatedly. However, there is a possibility of fluctuating SES over time, for instance, Hascoët et al. [5] showed the correlation coefficient between family incomes in the gap of four-years remained only .80. This change/fluctuation in SES was largely ignored in previous longitudinal studies, hence to get a more accurate relationship between SES and self-concept over various ages, the student's age is taken as a moderator variable. Notably, students' grade level was not included as a moderator in the analysis to avoid redundancy, given its high degree of overlap with age.

RQ: Does the association between family SES and students' self-concept weaken as age increases?

For decades, researchers have examined gender differences in self-concepts [6-8]. These studies consistently indicate that boys report higher math/science self-concept, whereas girls report higher verbal/language self-concept [9-13]. While these differences were primarily associated with gender role-specific domains, such as math, language, science, etc. [8,12,14], recent research suggests that lower self-concept in females is not limited to male-dominated

domains and may extend throughout academic self-concepts [15]. Additionally, studies show that males typically exhibit higher physical self-concept [16,17], while females often demonstrate superior emotional self-concept [17]. Overall, these results indicate an advantage for boys in academic and physical self-concept, except for domains such as language and emotional self-concept. However, research exploring gender differences in the relationship between SES and self-concept remains limited. Andersen and Smith [14] found that the association between SES and mathematical self-concept is stronger for boys, whereas for language self-concept, it is stronger for girls. Similarly, Chavous et al. [18] demonstrated a more robust association between SES and academic self-concept in boys compared to girls. In contrast, Deosaran [19] reported a nearly equal association for both genders. Hence, the study explores the possible moderation of gender.

RQ: Does gender influence the association between family SES and students' self-concept?

Demographic variables such as race, family structure, and school type could not be included as moderators because only a few studies reported on these variables or analyzed the relationship between SES and self-concept for these variables.

Methodological Moderators

Studies have measured SES in various ways; some have used multiple indicators or composite indices (e.g., [20-22]), and others have relied on a single indicator (e.g., [23-25]). Notably, research employing multiple indicators has revealed variation in the magnitude of the relationship depending on the specific indicator used [26-28]. Hence, comparing studies that use different measurement approaches may help explain the observed variability in the association between SES and self-concepts.

RQ: Does the measurement of family SES influence the strength of association between family SES and self-concept?

Researchers have studied various domains of self-concepts, with some focusing on specific domains like mathematics [20,29] or language [14,22]. Others have employed broader generic domains like academic self-concept [30,31] or general self-concept [32,33]. The reported variability in the relationship between SES and self-concept across these studies warrants an investigation into how this association differs by domain of self-concept. Accordingly, this study includes a comparison to examine the relationship between SES and self-concept across various self-concept domains.

RQ: Does the strength of association between SES and self-concept vary for various kinds/domains of self-concept?

Macro/Study Level Moderators

The studies included in this meta-analysis covered more than 100 countries and regions across six continents, providing significant geographic and cultural diversity. This diversity raises the question: could the national or regional economic status moderate the association between family SES and self-concept? We examine the national or regional economic status from two primary perspectives. First, since one of the two major variables of the present study is SES, which includes the family economy as one of the most important constituents, therefore, it is likely that the national/regional economy can influence in determining family SES and its outcomes. Second, existing literature indicates that national/regional economic status is linked to students' academic outcomes. For instance, Chiu and Klassens [34] multi-country investigation showed that mathematics self-concept was more strongly associated with academic achievement for students of wealthier economies. Hence, we included the national economy as a moderator variable:

RQ: Does the economic status of the country or region moderate the strength of association between family SES and self-concept?

Furthermore, the literature includes both primary studies (e.g., [35-37]) and secondary data analyses (e.g., [38-40]). Given the different nature and scope of these two research types, comparing them is essential to ensure the robustness of our findings.

RQ: Does the association between family SES and students' self-concept differ based on the type of data, i.e., primary or secondary data?

Previous research has suggested that families' SES impact on students has weakened over time (e.g., [41,42]); however, other contradicts these findings, suggesting a more persistent influence [43-45]. Consequently, it is important to determine whether the relationship between SES and self-concept has evolved over time.

RQ: Has the strength of association between family SES and students' self-concept changed over time?

Supplement 1b: Discussion on the Role of Specific SES Indicators

A separate analysis was conducted for the studies that used single indicators to determine which single factor yielded the strongest association. The results indicate that the relationship between SES and self-concept is strongest for resources at home, followed by parental education and parental occupation, with family income showing the weakest association. Given that the present study focused on students, for whom academic self-concept is the most prominent. The highest effect size for resources at home is unsurprising because most of the academic self-concepts are showing higher association (e.g., science, social science, scholastic), on which resources at home play a vital role. Previous research indicates that the number of books at home (a main component of resources at home), but not the family teaching activities, mediated the impact of SES on children's reading ability [46]. Furthermore, numerous studies have shown that books at home have a significant direct effect on students' academic achievement (e.g., [47]). However, this effect may be underestimated due to greater error in estimating books at home among low-achieving students [48].

Furthermore, parental education yielded a higher effect size than both family income and parental occupation. This finding aligns with previous meta-analyses that emphasize the relative importance of parental education over other SES indicators [26,41,49]. Parents' education likely influences academic self-concepts directly (through tutoring from parents) or indirectly (through role modelling). Research has also confirmed the intergenerational transmission of education; for example, Fleury and Gilles [50] found that this transmission accounts for around 15 percent of variance. In India and China— the world's two largest developing nations— increasing the average years of education for the first generation had a lasting impact on educational attainment for the second generation [51,52]. Consequently, higher parental

education level appears to positively influence their children's self-concept, particularly in education-related self-concept.

Parental occupation yielded a lower effect size than parental education but a higher than family income. This finding contradicts previous meta-analyses [45,53], which suggested the supremacy of parents' occupation over parents' education and family income. The result suggests that the occupational status may not influence self-concept directly but rather indirectly through other modes like household resources, books, etc. Furthermore, family income exhibited the lowest effect size among all the SES indicators. This aligns with several previous meta-analyses, which concluded that family income is the least predictive indicator in comparison to any other SES indicators (e.g., [54,55]). Many scholars have expressed their reservation regrading income indicator due to the potential inaccuracy of self-reported family annual income. In many cases, children are either unaware of their family's sources of income or are reluctant to disclose them, which may be a reason why family income is not showing a strong association with self-concept. Another possibility is that while parental education and family resources (especially educational resources) can directly shape self-concept, family income can only influence it indirectly.

Supplement 1c: Discussion on the Role of Specific Self-Concept Domains

Regarding specific self-concept domains, significant differences were observed in the magnitude of the association. Consistent with the results of generic classification, effect sizes were larger for academic-related domains such as science, social sciences, and scholastic self-concept, with the notable exception of math and verbal self-concept. Math self-concept, investigated in one third of the samples, showed an effect size significantly below the other educational self-concepts and the overall effect size. One possibility is that, unlike other academic self-concepts, mathematical ability is seen more as an innate ability (e.g., [56]), like physical ability or intelligence, resulting in an effect size closer to those domains than to science, social science, or academic self-concept. Furthermore, achievement in mathematics does not require many resources, like sciences; therefore, making it less dependent on family SES.

Studies using general self-concept yielded a similar effect size to the overall effect size. However, studies where various domains of self-concept were combined, i.e., composite self-concept, showed a smaller effect size than the general self-concept and overall effect size. This finding suggests that an accumulation of various domains of self-concepts does not reflect general self-concept. A potential explanation is that the composite self-concept aggregates diverse domains that are fundamentally different in nature; many of them are non-academic aspects of the self-concept. Consequently, combining these different domains may dilute the overall effect size, resulting in a smaller effect size than the general self-concept.

Non-academic self-concepts, except for social self-concept, exhibited significantly lower effect sizes than both academic and general/global self-concepts. One explanation for this disparity is that many non-academic self-concepts are related to interpersonal relationships (e.g., peers or parental relationships) and personal traits (e.g., appearance and physical ability), whereas SES may not have much of a role to play. For instance, in the case

of physical self-concept, the effect size was just .069, and in the case of appearance, it was hardly .032. This pattern aligns with numerous individual studies [57-59]. Overall, the results suggest that academic self-concepts, which are mostly related to acquired abilities, are connected more with family SES than non-academic self-concepts that are mostly based on non-acquired attributes like intelligence, appearance, athlete, etc.

Interestingly, social self-concept showed the third-highest effect size among all the specific self-concept domains. That is much higher than any other non-academic self-concept and even overall self-concept, and a few domains of academic self-concept. This indicates that low SES can be particularly damaging to a student's social self-concept. The results suggest that the habitus fostered by family SES [60,61] or the mindset shaped by their class identity [62,63] significantly influence a student's perception of their social skills. One possible explanation is that SES or class identity inherently provides individuals with an understanding of their social standing in the surrounding world. Consequently, low SES may cause students to perceive themselves as less socially accepted agents, which in turn diminishes their social self-concept.

Supplement 1d: Discussion on the Role of Study/Macro Level Moderation

National Economy

The present study also aimed to determine whether the association between SES and self-concept varies between countries with developing and developed economies. While the effect size for studies from developing countries/regions was slightly larger than that from developed countries/regions, meta-regression revealed no significant moderation effect of national economy on the overall association. Although previous cross-country investigations have shown that the national economy plays a significant role in students' academic outcomes (e.g., [34,64]), the present study did not find any meaningful effect on the SES and self-concept link. This suggests that while the national economy may influence the family finances and students' academic attainments, it does not alter how family SES shapes students' self-concept. In other words, family SES appears to influence student self-concept almost equally across different national economic contexts.

Relationship Over Time

Additionally, we examined whether the relationship between SES and self-concept has changed over time. The result shows near-zero correlation with the years of data collection, indicating that the strength of this relationship has remained indifferent with reference to time. Meta-regression also further confirmed that the year of data collection has no significant effect on the association between SES and self-concept. While some previous research suggested that the impact of family SES on students has weakened over time (e.g., [41,42]), other evidence supports a more persistent influence [43-45]. Our findings demonstrate that the link between SES and self-concept has not diminished, suggesting that SES remains as critical today in shaping students' self-concept as it was several decades ago. This indicates that the social reality around SES has remained largely unchanged, particularly inside the schools/colleges' premises.

Primary and Secondary Data Type

One of the moderators examined in this meta-analysis was data type, i.e., whether the data was collected for the study (primary data) or whether scholars had used secondary databases. While the result of individual moderator analysis indicated significant moderation, meta-regression revealed an insignificant effect of data type on the association between SES and self-concept. That is, although the effect size was slightly larger in the case of primary data than secondary data-based samples, the difference between them is not significant. This finding suggests that the influence of SES on self-concept remains consistent regardless of whether the study utilizes small-scale primary data or large-scale secondary big data.

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