Review preregistration protocol: A living systematic review and meta-analysis for SEB skills

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Objectives and Rationale

The social, emotional, and behavioral (SEB) skills framework, recently proposed by Soto and colleagues (2021), offers an integrative alternative to earlier models of soft skills, bringing conceptual clarity and new measurement tools (Soto et al. 2022) to the field. Given the framework's novelty and the longstanding challenges in psychological research —such as fragmented evidence, inconsistent methods, and limited reproducibility— we believe it is crucial to adopt a modern, cumulative, and open approach to studying new frameworks, in general, and the SEB skills framework, in particular.

This project introduces a *living systematic review* and *meta-analysis* of research adopting the SEB framework. Unlike traditional reviews, this living review will be continuously updated to incorporate newly published studies, making the accumulated evidence transparent, accessible, and dynamically integrated.

The goals of this project are:

- To **synthesize and review** the literature on SEB skills using the framework proposed by Soto and colleagues (2021).

- To provide an **open-access, regularly updated database** of all relevant publications, including metadata on study design, samples, measures, and data availability.

- To **meta-analyze cross-sectional associations** between SEB skills domains and all other variables reported in the literature, using:

  - Multilevel random-effects meta-analysis for correlation coefficients

  - Meta-analytic Structural Equation Modeling (metaSEM)

- To develop a **user-friendly ShinyApp** that allows researchers, educators, and policy-makers to explore the meta-analytic findings and conduct rapid, ad-hoc syntheses.

This preregistration outlines the planned methods for data extraction, coding, and synthesis, ensuring transparency and reproducibility from the outset.

Disclosure of pre-existing pilot of the study; Before preregistering the methods for this living systematic review and meta-analysis, the author run a pilot study using initial data collected on January 2025 to estimate the feasibility of the project. This preregistration serves as a path toward enlarging the data in a systematic and consistent way through the next future.

Methods

Data

The aim of the project is to keep track of the literature on SEB skills adopting a skill-based and not trait-based framework and measurement. We will thus strictly adhere to this selection and exclude trait-based frameworks and measurement (e.g., the OECD framework, SEL framework), and frameworks not based on the Big Five. This avoids confusion with personality traits, who should keep their intertwined but separated literature.

Sources and search strategy

The search will be conducted on two separate databases (Scopus and Web Of Science) using broad search strings (see Table 1). Indeed, given the broad scope of the review, it is fundamental that our search string cover all publications on the topic of SEB skills and not only studies focusing on the association between SEB skills and specific outcomes and/or specific experimental manipulation or interventions. For this reason we decided to keep as string search the seminal theoretical and measurement papers that, assuming scholars cite the necessary literature, will always be included (at least one of them) into their reference list. In other words, we will search WOS and Scopus for all the papers citing at least one of the seminal/measurement SEB papers (this list will be updated when new measurement or theoretical papers are published). The initial string will consider the following papers and is provided in Table 1, while additional inputs for updates are provided in Table 2:

- **Seminal theoretical papers**

  - Taking Skills Seriously: Toward an Integrative Model and Agenda for Social, Emotional, and Behavioral Skills (Soto, Napolitano, and Roberts 2021)

- **Measurement**

  - An Integrative Framework for Conceptualizing and Assessing Social, Emotional, and Behavioral Skills: The BESSI (Soto et al. 2022)

  - The Behavioral, Emotional, and Social Skills Inventory (BESSI): Psychometric Properties of a German-Language Adaptation, Temporal Stabilities of the Skills, and Associations with Personality and Intelligence (Lechner et al. 2022)

  - The Italian Behavioral, Emotional, and Social Skills Inventory (BESSI-I) (Feraco et al. 2024)

  - The Behavioral, Emotional, and Social Skills Inventory: A Spanish Adaptation and Further Validation in Adult Population (Postigo et al. 2024)

- **Short measurement versions**

– Assessing Social, Emotional, and Behavioral Skills in Just a Few Minutes: 96-, 45-, and 20-Item Short Forms of the BESSI (Sewell et al. 2024)

Table 1: Initial search string for the two databases

Search string
Scopus
(REF (taking AND skills AND seriously: AND toward AND an AND integrative AND model AND agenda AND for AND social, AND emotional, AND behavioral AND skills) OR REF (an AND integrative AND framework AND for AND conceptualizing AND assessing AND social, AND emotional, AND behavioral AND skills: AND the AND bessi) OR REF (the AND behavioral, AND emotional, AND social AND skills AND inventory AND psychometric AND properties AND of AND a AND german-language AND adaptation, AND temporal AND stabilities AND of AND the AND skills, AND associations AND with AND personality AND intelligence) OR REF (the AND italian AND behavioral, AND emotional, AND social AND skills AND inventory AND bessi) OR REF (the AND behavioral, AND emotional, AND social AND skills AND inventory: AND a AND spanish AND adaptation AND further AND validation AND in AND adult AND population) OR REF (assessing AND social, AND emotional, AND behavioral AND skills AND in AND just AND a AND few AND minutes: AND 96-, AND 45-, AND 20-item AND short AND forms AND of AND the AND bessi)) AND PUBYEAR > 2019 AND PUBYEAR < 2026
Web Of Science
10.1177/0963721420978613 (Cited DOI) or 10.1037/pspp0000401 (Cited DOI) or 10.3390/jintelligence10030063 (Cited DOI) or 10.1080/00223891.2024.2335912 (Cited DOI) or 10.1177/10731911231225197 (Cited DOI) or 10.1177/10731911241256434 (Cited DOI) |

Table 2: Updates of the search strings

Database	String
Scopus	• AND ORIG-LOAD-DATE AFT YYYYMMDD
Web Of Science	• Title of new measurement/seminal papers added • | Timespan: YYYY-MM-DD to YYYY-MM-DD (*Index Date)* • DOI of new measurement/seminal papers added

Eligibility Criteria

Given the double aim of this project (review + meta-analysis), broader eligibility criteria were applied to select papers for systematic review and the more specific (nested) meta-analytic synthesis.

1. **Review.**

- **Review eligibility:** Citations are included in the review synthesis if:

  – The main topic of the paper is SEB skills.

  – The paper provides substantial theoretical and quantitative information about SEB skills.

- **Exclusion from the review.** Citations are completely excluded from the review synthesis if:

  – They were not focusing on or adopting the SEB skill framework or emerging frameworks based on it. For example, a study focusing on the development of the Big Five should be excluded although it cites the reference papers. However, if it focuses on the development of the Big Five but also collects side data using the BESSI, it will be included in the meta-analysis and -if it also interprets and discuss SEB results- in the review;

  – They were published as books;

  – They were published in languages that were not comprehensible for the authors;

  – Referer to the SEB framework, but focus on different frameworks, such as the OECD or CASEL.

2. **Meta analysis**

- **Meta analysis eligibility.** Citations are included in the meta-analysis if:

  – The study assessed SEB skills using a validated skill-based assessment referencing to the SEB framework;

  – The study referred to original data that are not already reported in other included studies;

  – The population of the study was either the general population or a clinical population with mild/moderate mental health issues.

- **Exclusion from the meta analysis.** Citations are excluded if:

  – It is a qualitative study;

- The study does not measure participants' SEB skills;

- SEB skills were measured with a non-validated measure or with a measure that does follow the SEB framework;

- The study does not report correlations at baseline or the data could not be reduced to correlations nor obtained by the authors;

- Data were previously used in a paper already included in the meta-analysis;

- The study focused on severe mental health issues (e.g., schizophrenia, bipolar disorder);

- They were published in languages that were not comprehensible for the authors.

Outcomes

This review is not limited to any outcome, but all possible outcomes will be coded and included. Outcomes will be treated in the following way:

- **Broad category:** Each outcome is assigned to a broad category. Examples might be skills, mental health, school, demographic variables, job, personality traits…

- **Second-level category:** Subsequently, within each broad category, each outcome is assigned to a more specific category. For instance, the broad 'school' category may include academic achievement, learning factors.

- **Specific construct:** Finally, each construct is labeled with its own construct label (e.g., extraversion, self-management, depression, anxiety, school engagement).

Measures of effect

Correlations (Pearson's r) between skills and outcomes will be coded in the form of correlation matrices.

Coding procedure

Table 3 reports the variables that will be coded for each included study.

Table 3: Coding scheme

Variable Name	Description	Value Type
Download date	The day the BibTex was downloaded.	Date
Paper ID	The progressive number of the paper.	Integer
Sample ID	The progressive letter identifying each sample within the same study.	Text
Matrix ID	The unique identifier of each matrix of correlations composed by paper ID + sample ID.	Text
DOI	The link-formatted digital object identifier.	Text (link)
Title	Title of the article.	Text
Abstract	Abstract of the paper.	Text
Journal	Name of the journal in which the article was published.	Text
Authors	Full list of authors' names.	Text
Author et al	Abbreviated authors' list.	Text
Year	Year of publication.	Integer
Exclusion general	Whether the paper should be included or the reason why the paper was excluded during full text screening.	Category
Exclusion meta	The reason why the paper cannot be included in the meta-analysis (blank if 'exclusion_general' != 'include').	Category
Review topics	What are the main topics of the paper (blank if 'exclusion_general' != 'include').	Category
Final decision	Whether the paper should be excluded ('exclude'), included in the meta-analysis ('meta'), in the review ('review') or both ('both') .	Category
Email	Corresponding author email.	Text (email)
Open data	Link to the available data, if any.	Text (link)
Study design	The design of the study (cross-sectional, longitudinal, experimental).	Category
Country	Participants' country.	Category
Gender	The percentage of females included in the study.	Percentage
Age	The mean age of the sample.	Numeric
N	The sample size.	Integer
Age class	Whether the sample is composed by children, school-age students, young adults, adults, or older adults.	Category
Clinical	Whether the sample is a clinical sample or not.	Boolean
Clinical specification	If clinical, what specific clinical sample is.	Text

Variable Name	Description	Value Type
SEB measure	The SEB/BESSI measure used.	Category
SEB measure type	Whether the SEB measure is a short or long form.	Category
Trait framework	What framework of personality traits is adopted (e.g., Big Five, HEXACO).	Category

Risk of bias (quality) assessment

We will not conduct a formal risk-of-bias assessment primarily because we expect that included data are derived from self-report measures and most studies will be non-experimental in nature. Furthermore, we expect the majority of studies will not explicitly aim to test the specific associations under investigation through the different meta-analysis that might be conducted with our data. In many cases, SEB skills will not be measured with the intent of examining their relationship with the outcomes at hand. For this reason, we believe that traditional risk-of-bias evaluations would not offer meaningful insights for this study. Nonetheless, we invite people who will use our data for specific meta-analysis to consider adding a risk of bias assessment based on their aims.

Data synthesis

Data will be analyzed using three-level random effect meta-analytic models with effects nested within studies or with one-stage metaSEM.

The meta-analytic models used to synthesize bivariate associations between SEB skills and other variables will be run using `metafor` (Viechtbauer 2010). Correlations will be transformed to Fisher Z using the `escalc` function. The `rma.mv` function will be used for multilevel random-effects models. Estimates will be back-transformed to r.

For the metaSEM analyses, we use the metaSEM package (Cheung [aut and cre 2024). The `tssem1` function will be used to estimate the pooled correlation matrices. SEM models will be estimated using one-stage MASEM with the `osmasem` function.

Analysis of subgroups or subsets

We will not provide functionality for conducting subgroup or moderator analyses.

Open science

All the data, codes, and materials will be freely available on the GitHub page of the project.

Information

- Conflict of interest: none

- Fundings: none

- Keywords: socio-emotional skills; SEB skills; meta-analysis; systematic review; living meta-analysis; living review

Expected future development

- Synthesis of longitudinal and experimental studies

- Moderators and subgroup analyses

- Bibliometric analysis

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